



Test Report

FCC Part 15.247

Industry Canada RSS210

**DTS Devices Operating in range 2400-2483.5MHz and
5725–5850 MHz**

Model #: PCG-4Q4L

**SONY Corporation
1-7-1 Konan, Minato-ku,
Tokyo, 108-0075
Japan**

**FCC ID: AK8PCG4Q4L
IC ID: 409B-PCG4Q4L**

**TEST REPORT #: EMC_SONYE_025_08001_15_247_PCG4Q4L
DATE: 2008-7-30**



**Bluetooth Qualification
Test Facility
(BQTF)**



**FCC listed:
A2LA
accredited**

**IC recognized #
3462B**

CETECOM Inc.

411 Dixon Landing Road • Milpitas, CA 95035 • U.S.A.

Phone: + 1 (408) 586 6200 • Fax: + 1 (408) 586 6299 • E-mail: info@cetecomusa.com • <http://www.cetecom.com>

CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686

Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

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1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Part 15.247 of the Code of Federal Regulations.

Company	Description	Model #
SONY Corporation	Notebook PC	PCG-4Q4L

This report is reviewed by:

Lothar Schmidt
(Director Regulatory and
Antenna Services)

2008-7-30 EMC & Radio

Date	Section	Name	Signature
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This report is prepared by:

Peter Mu
(EMC Project Engineer)

2008-7-30 EMC & Radio

Date	Section	Name	Signature
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The test results of this test report relate exclusively to the test item specified in Identification of the Equipment under Test. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	EMC
Address:	411 Dixon Landing Road Milpitas, CA 95035 U.S.A.
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Responsible Test Lab Manager:	Lothar Schmidt
Responsible Project Leader:	Peter Mu
Date of test:	2008-7-21 to 2008-7-29

2.2 Identification of the Client

APPLICANT	
Applicant (Company Name)	SONY Corporation
Street Address	1-7-1 Konan, Minato-ku,
City/Zip Code	Tokyo, 108-0075
Country	Japan
Contact Person	Michio Kobayashi
Telephone	+81-263-72-5696
Fax	+81-263-72-9755
e-mail	<u>Michio.Kobayashi@jp.sony.com</u>

2.3 Identification of the Manufacturer

MANUFACTURER (If different from Applicant)	
Applicant (Firm Name):	Sony EMCS Corporation
Contact Person:	Michio Kobayashi
Telephone:	+81-263-72-5696
Fax:	+81-263-72-9755
Address Line 1:	5432 Toyoshima,
City:	Azumino-shi, Nagano
Postal Code:	399-8282,
Country:	Japan
e-mail:	<u>Michio.Kobayashi@jp.sony.com</u>

3 Equipment under Test (EUT)**3.1 Specification of the Equipment under Test**

EUT	
Marketing Name of EUT (if not same as Model No.):	VAIO-VGN TT
Description:	Notebook PC
Model No:	PCG-4Q4L
FCC ID:	AK8PCG4Q4L
IC ID:	409B-PCG4Q4L

Frequency Range:	2400-2483.5MHz Channel 1, 6, 11 for 802.11b/g and 802.11n HT20 mode Channel 2, 6, 10 for 802.11n HT40 mode 5725-5850 MHz Channel 149, 157, 165 for 802.11a and 802.11n HT20 mode Channel 151, 159, 167 for 802.11n HT40 mode
Type(s) of Modulation:	OFDM
Antenna Type:	Inverted F antenna Peak Gain 2400-2483.5MHz: 1.88dBi. Peak Gain 5725-5850MHz: 1.06dBi.
Max Output Power:	Sub-band 1, 2400-2483.5MHz 802.11b: Radiated: 15.01dBm (31.70mW) EIRP Conducted: 18.6dBm (72.4mW) Sub-band 1, 2400-2483.5MHz 802.11g: Radiated: 21.92dBm (155.6mW) EIRP Conducted: 18.2dBm (65.8mW) Sub-band 1, 2400-2483.5MHz 802.11n HT20: Radiated: 20.77dBm (119.4mW) EIRP Conducted: 16.1dBm (40.8mW) Sub-band 1, 2400-2483.5MHz 802.11n HT40: Radiated: 17.81dBm (60.39mW) EIRP

	Conducted: 15.8dBm (38.0mW) Sub-band 2, 5725-5850MHz 802.11a: Radiated: 19.10dBm (81.28mW) EIRP Conducted: 15.3dBm (34.0mW) Sub-band 2, 5725-5850MHz 802.11n HT20: Radiated: 18.16dBm (65.56mW) EIRP Conducted: 15.1dBm (32.4mW) Sub-band 2, 5725-5850MHz 802.11n HT40: Radiated: 16.27dBm (42.36mW) EIRP Conducted: 17.9dBm (61.5mW)
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3.2 Identification of the Equipment under Test (EUT)

EUT #	TYPE	MANF.	MODEL	SERIAL #
1	EUT	SONY Corporation	PCG-4Q4L	5865C0A7

3.3 Identification of Accessory equipment

AE #	TYPE	MANF.	MODEL	SERIAL #
1	AC/DC ADAPTER	SONY Corporation	VGP-AC16V13	148015421 0110574

4 Subject Of Investigation

All testing was performed on the product referred to in Section 3 as EUT. EUT operates in the band 2400-2483.5MHz in legacy 802.11b/g and 802.11n mode, and in 5725-5850 MHz in legacy 802.11a and 802.11n mode.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT operating under all operating modes as specified by Sony per requirements listed in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations. The maximization of portable equipment is conducted in accordance with ANSI C63.4

5 Radiated Measurements

5.1 Maximum Peak Output Power § 15.247 (b)(1) (Radiated)

5.1.1 Limits

FCC15.247 (b) (1): 4W (36dBm), with antenna gain < 6dBi.

RSS-210 A8.4 (4): 4W (36dBm)

5.1.2 Results:

EIRP 802.11 a/b/g Mode:

TEST CONDITIONS $T_{nom}(23)^{\circ}C$, $V_{nom}VDC$	Channel Frequency	EIRP (dBm)	EIRP (mW)	Verdict
Sub-band 1: 2400-2483.5MHz (802.11b)	2412	13.33	21.53	PASS
	2437	14.29	26.85	PASS
	2462	15.01	31.70	PASS
Sub-band 1: 2400-2483.5MHz (802.11g)	2412	20.18	104.23	PASS
	2437	21.69	147.57	PASS
	2462	21.92	155.60	PASS
Sub-band 2: 5725-5850MHz (802.11a)	5745	19.10	81.28	PASS
	5785	18.30	67.61	PASS
	5825	17.58	57.28	PASS

EIRP 802.11n HT20 MODE:

TEST CONDITIONS $T_{nom}(23)^{\circ}C$, $V_{nom}VDC$	Channel Frequency	EIRP (dBm)	EIRP (mW)	Verdict
Sub-band 1: 2400-2483.5MHz	2412	19.20	83.18	PASS
	2437	20.08	101.86	PASS
	2462	20.77	119.40	PASS
Sub-band 2: 5725-5850MHz	5745	18.16	65.46	PASS
	5785	17.82	60.53	PASS
	5825	17.10	51.29	PASS

EIRP 802.11n HT40 MODE:

TEST CONDITIONS $T_{nom}(23)^{\circ}C$, $V_{nom}VDC$	Channel Frequency	EIRP (dBm)	EIRP (mW)	Margin (mW)
Sub-band 1: 2400-2483.5MHz	2422	17.71	59.02	PASS
	2437	17.27	53.33	PASS
	2452	17.81	60.39	PASS
Sub-band 2: 5725-5850MHz	5755	16.27	42.36	PASS
	5795	14.77	29.99	PASS

5.1.3 Measurement Plots EIRP**EIRP 802.11b 2412MHz**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11b CH 1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

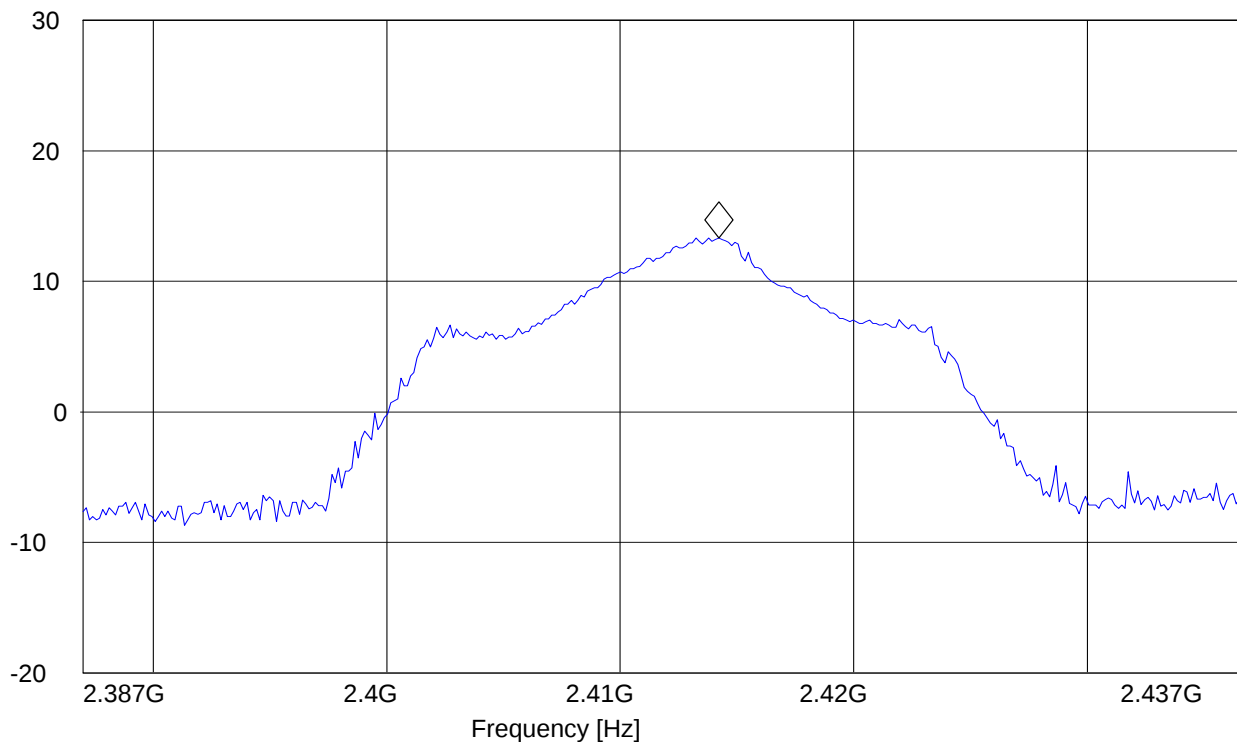
SWEEP TABLE: "EIRP RLAN CH1"

Short Description:		EIRP RLAN channel-2412 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.414214429 GHz

13.33 dBm

Level [dBm]



EIRP 802.11b 2437MHz

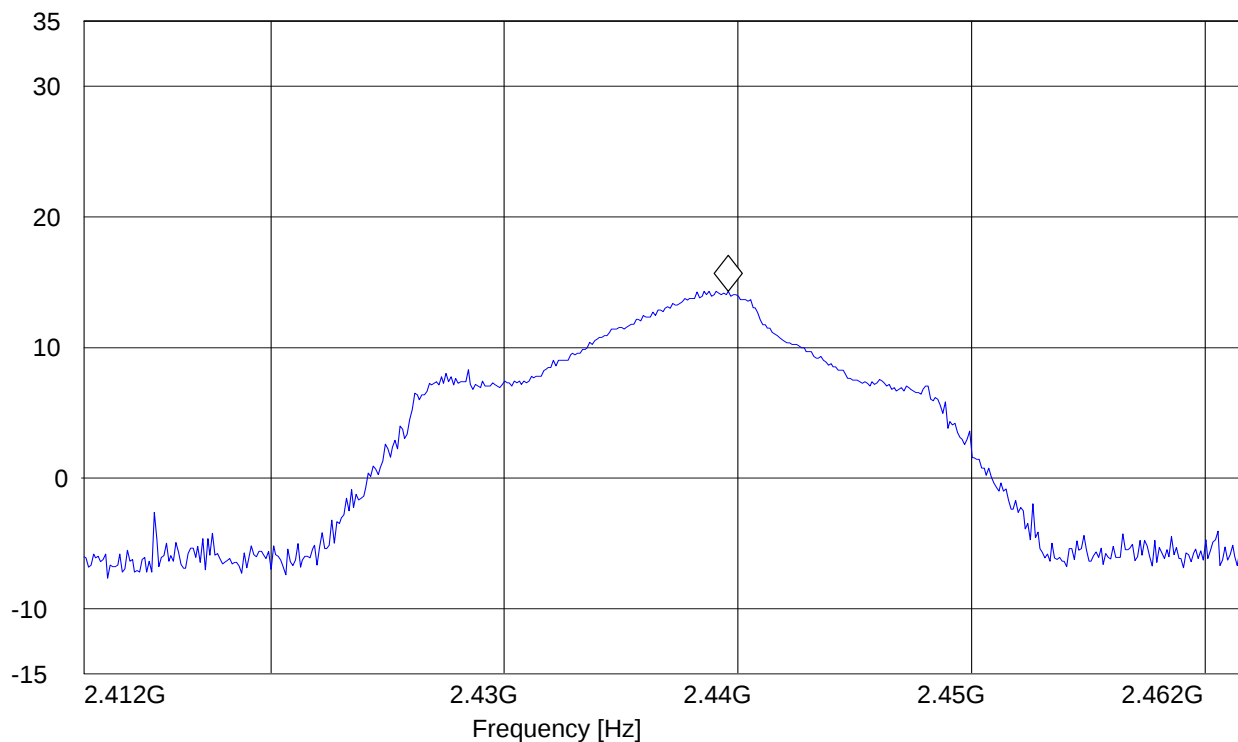
EUT: Laptop
Customer:: Sony
Test Mode: 802.11b CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "EIRP RLAN CH6"

Short Description:		EIRP RLAN channel-2437 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.43959519 GHz 14.29 dBm

Level [dBm]



EIRP 802.11b 2462MHz

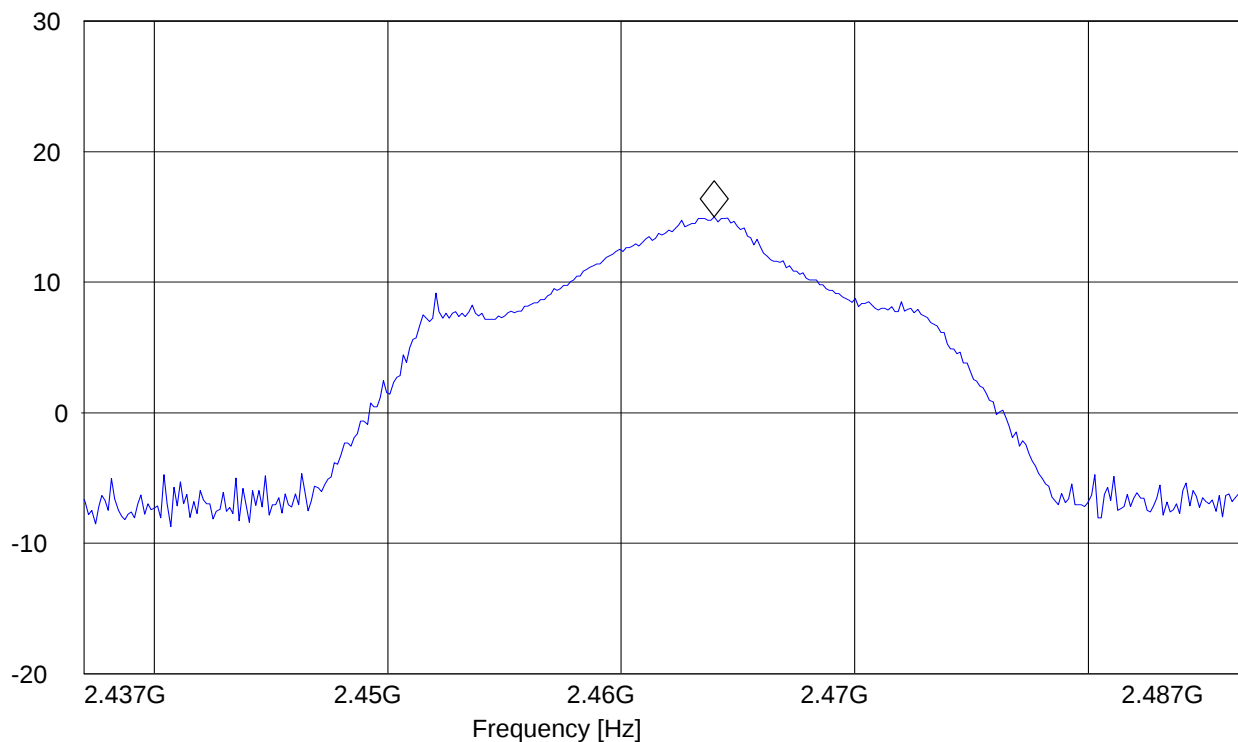
EUT: Laptop
Customer:: Sony
Test Mode: 802.11b CH 11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "EIRP RLAN CH11"

Short Description:		EIRP RLAN channel-2462 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.463993988 GHz 15.01 dBm

Level [dBm]



EIRP 802.11g 2412MHz

EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

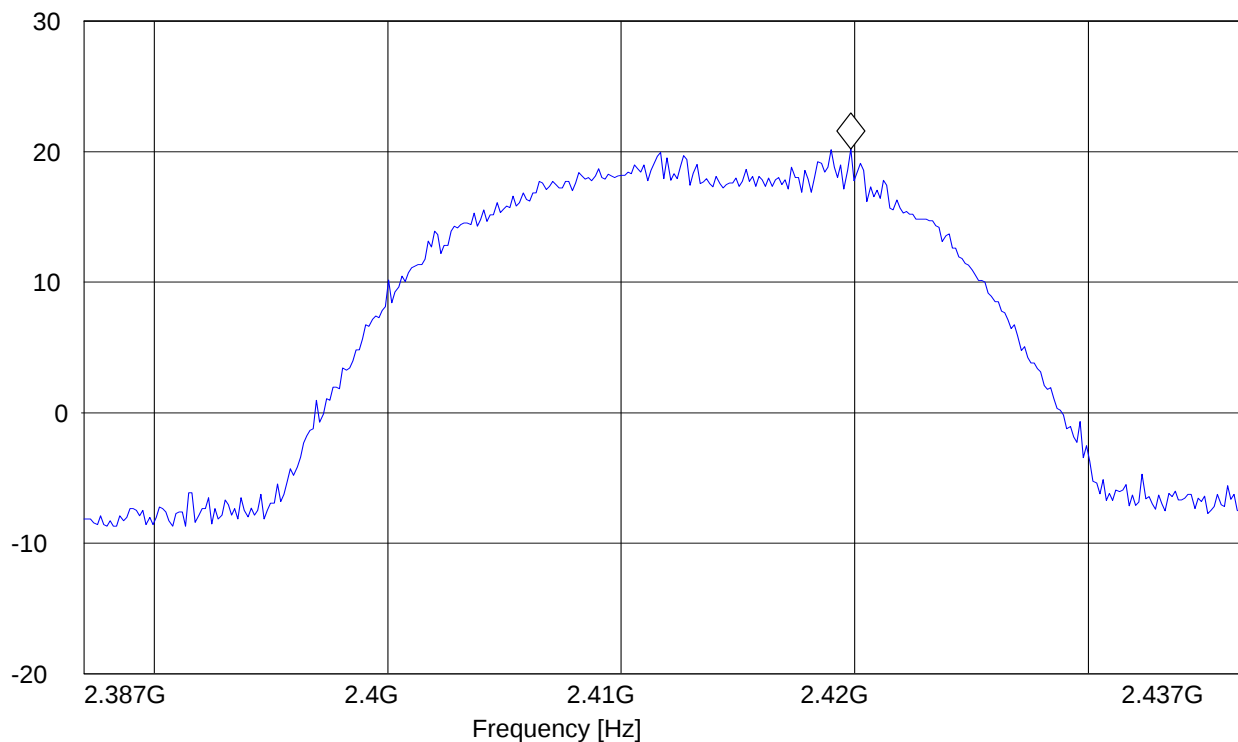
SWEEP TABLE: "EIRP RLAN CH1"

Short Description:		EIRP RLAN channel-2412 MHz			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency				
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.419825651 GHz

20.18 dBm

Level [dBm]



EIRP 802.11g 2437MHz

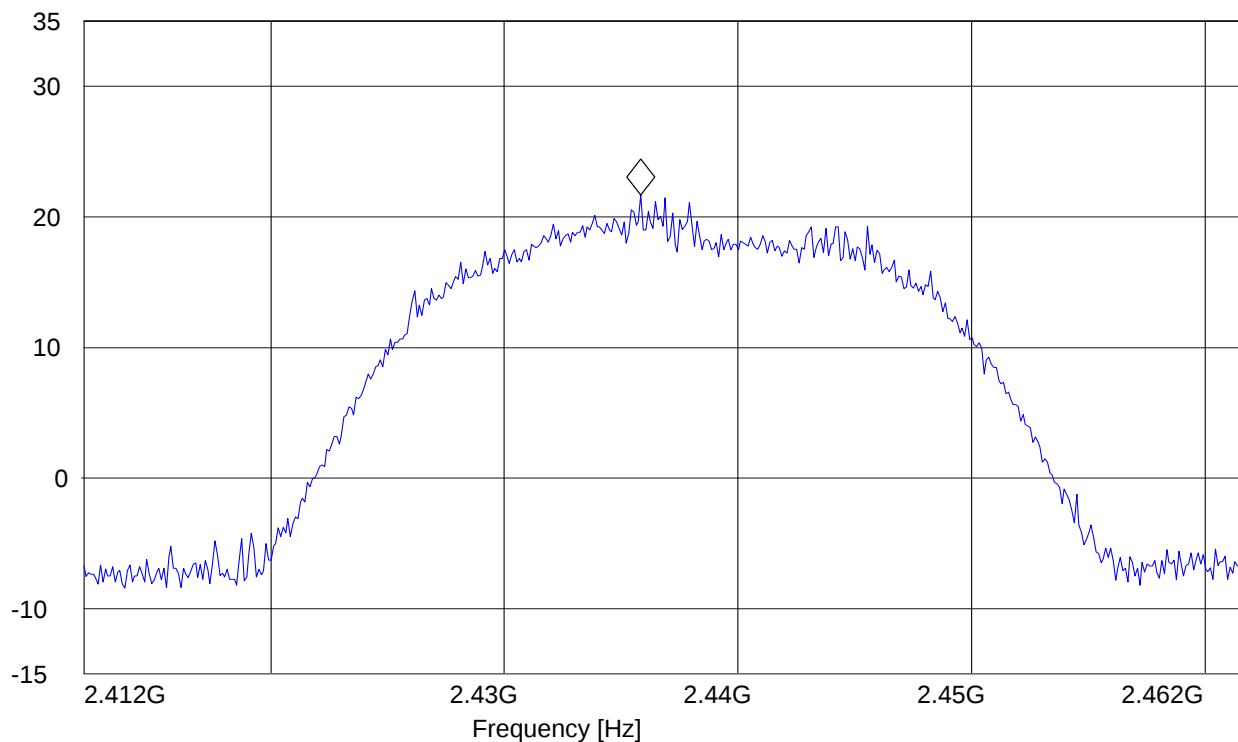
EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "EIRP RLAN CH6"

Short Description:		EIRP RLAN channel-2437 MHz			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency				
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.435843687 GHz 21.69 dBm

Level [dBm]



EIRP 802.11g 2462MHz

EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

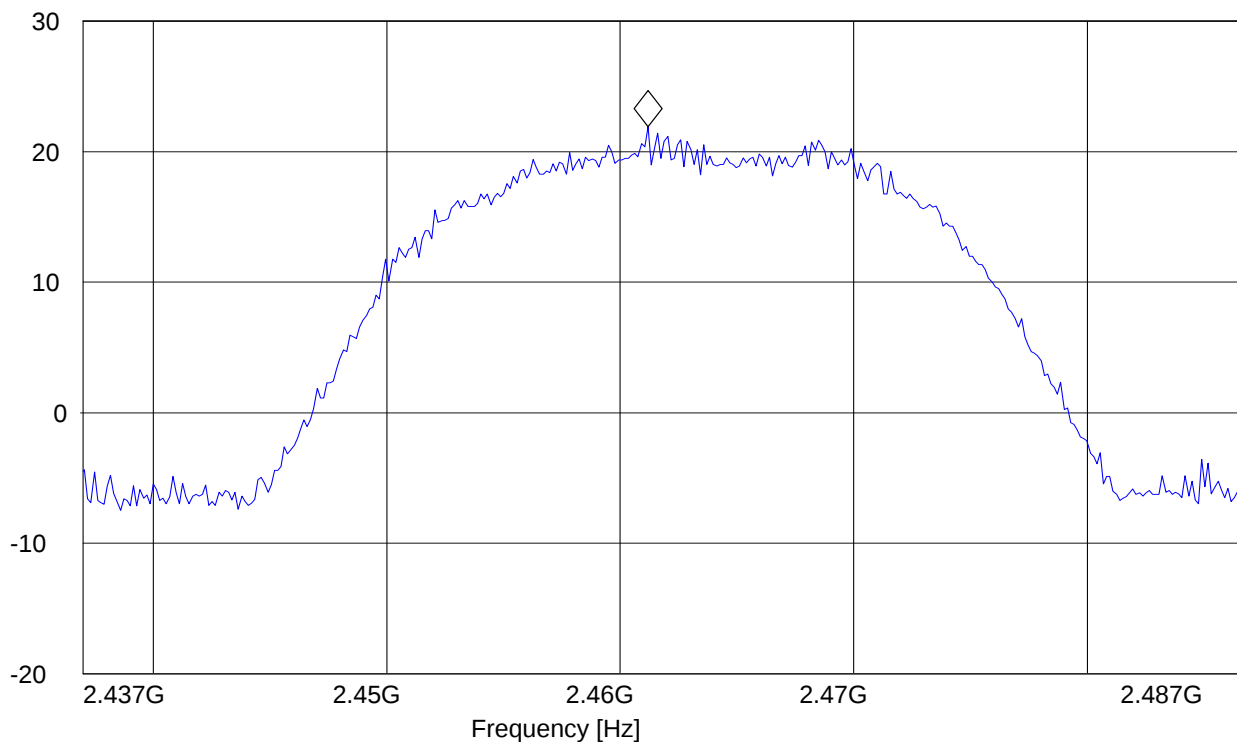
SWEEP TABLE: "EIRP RLAN CH11"

Short Description:		EIRP RLAN channel-2462 MHz			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.461188377 GHz

21.92 dBm

Level [dBm]



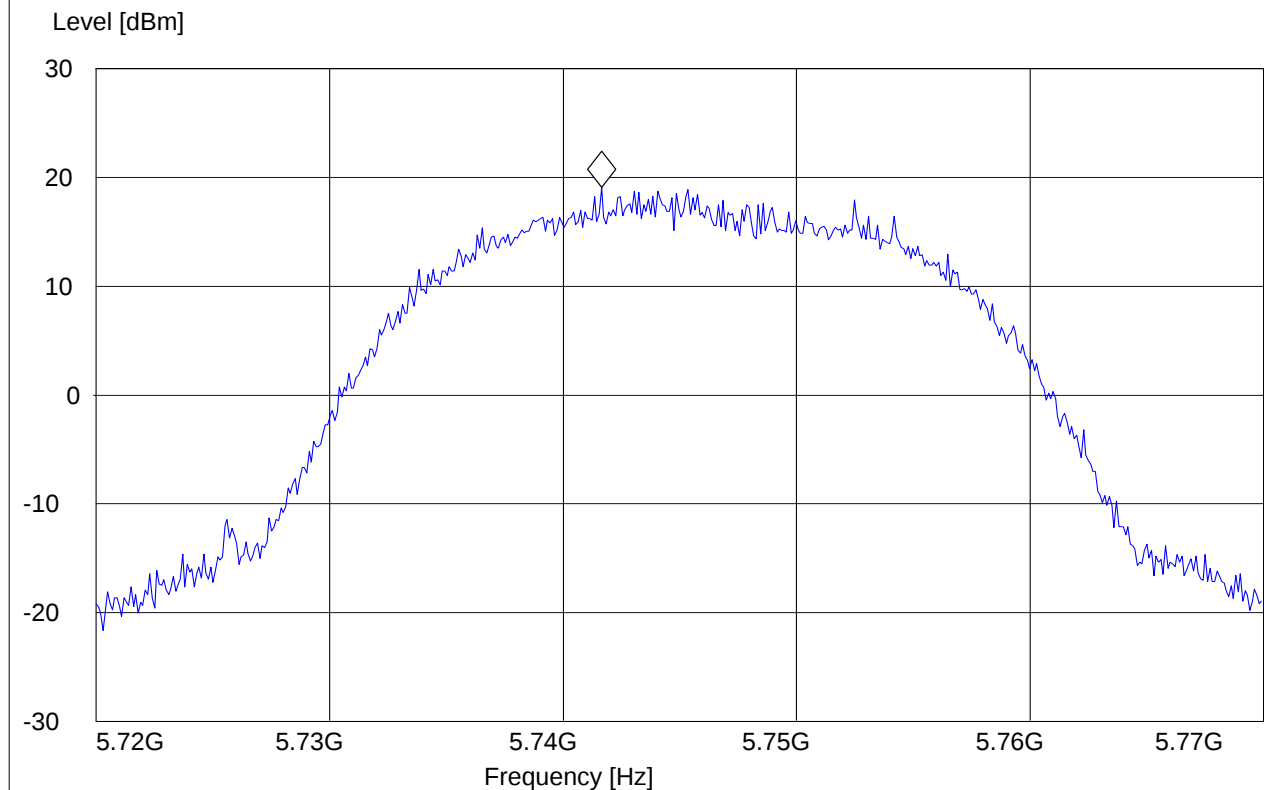
EIRP 802.11a 5745MHz

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 149
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "EIRP 802.11a_149"

Short Description:		EIRP channel-5260 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
5.7 GHz	5.8 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM

Marker: 5.741643287 GHz 19.1 dBm



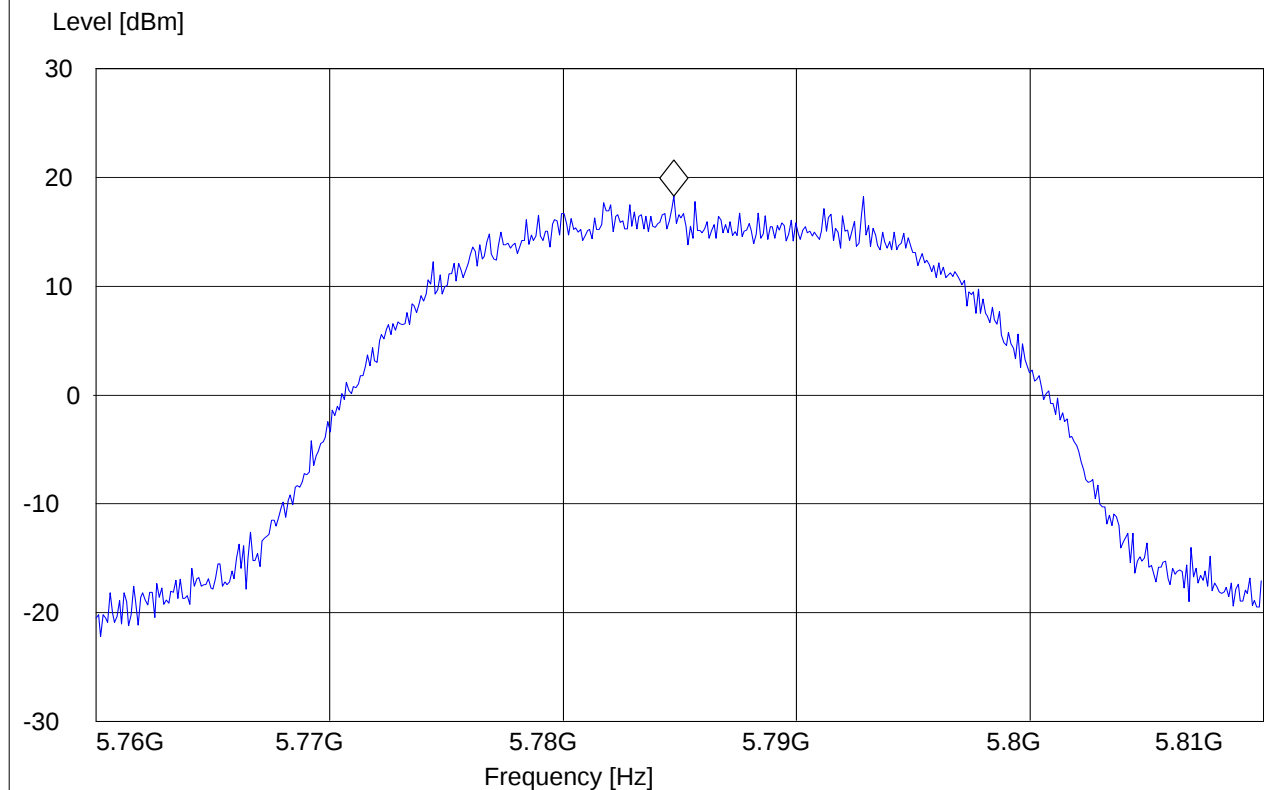
EIRP 802.11a 5785MHz

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "EIRP 802.11a_157"

Short Description:		EIRP channel-5260 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
5.8 GHz	5.8 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM

Marker: 5.784749499 GHz 18.3 dBm



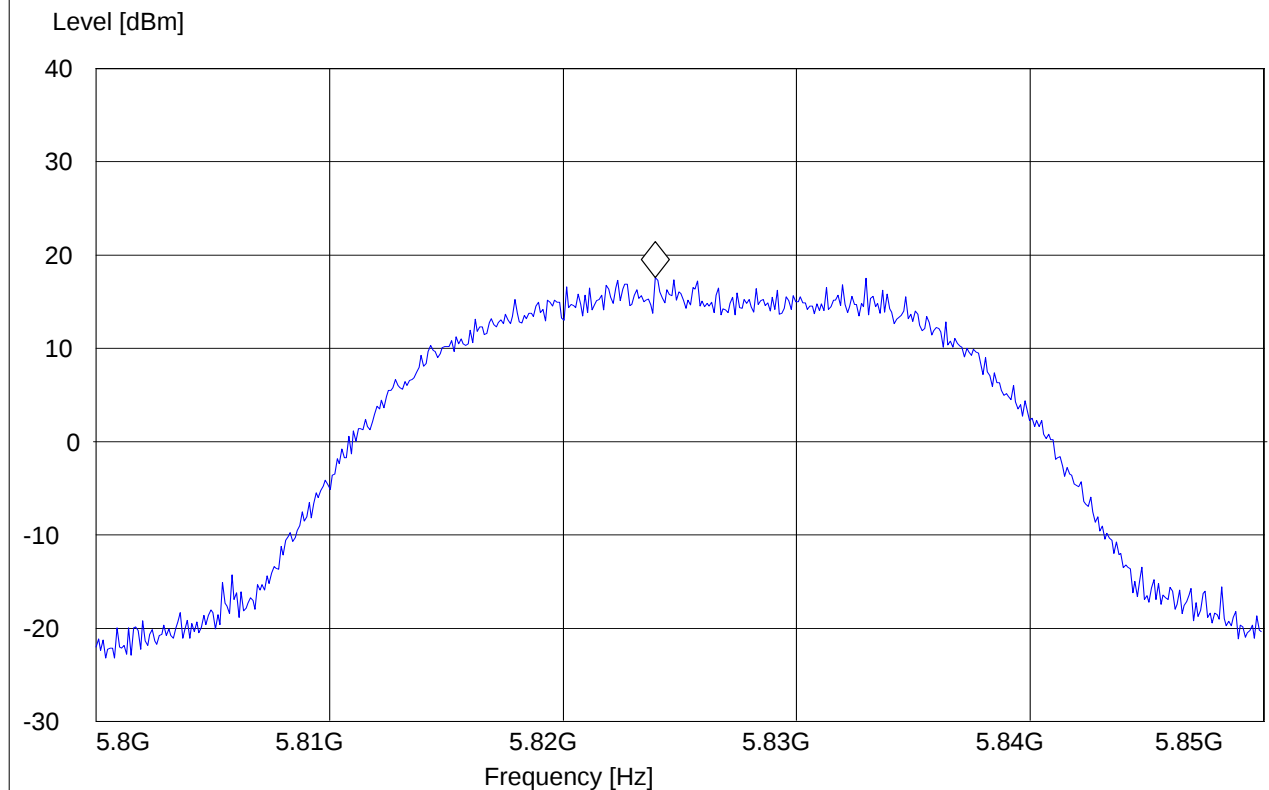
EIRP 802.11a 5825MHz

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 165
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "EIRP 802.11a_165"

Short Description:		EIRP channel-5260 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
5.8 GHz	5.9 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM

Marker: 5.823947896 GHz 17.58 dBm



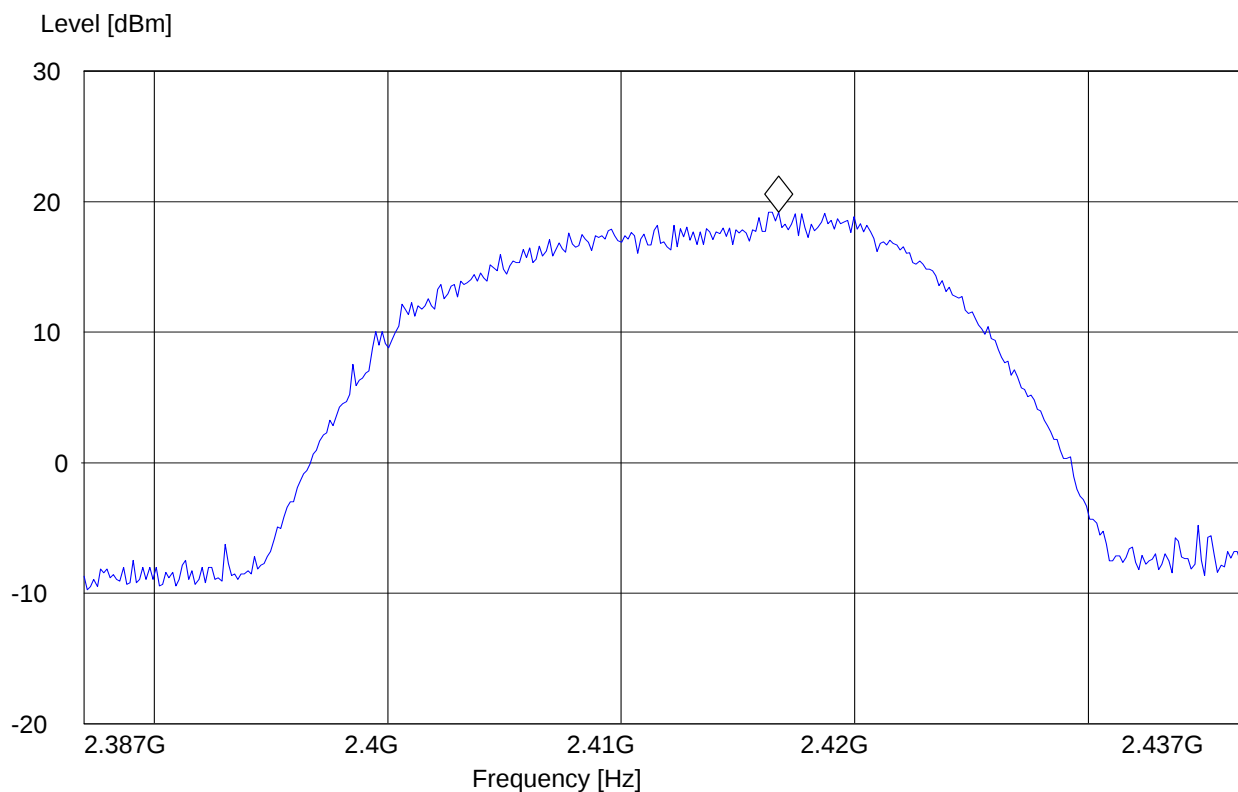
EIRP 802.11n HT20 2412MHz

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "EIRP RLAN CH1"

Short Description:		EIRP RLAN channel-2412 MHz			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency				
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.416739479 GHz 19.2 dBm



EIRP 802.11n HT20 2437MHz

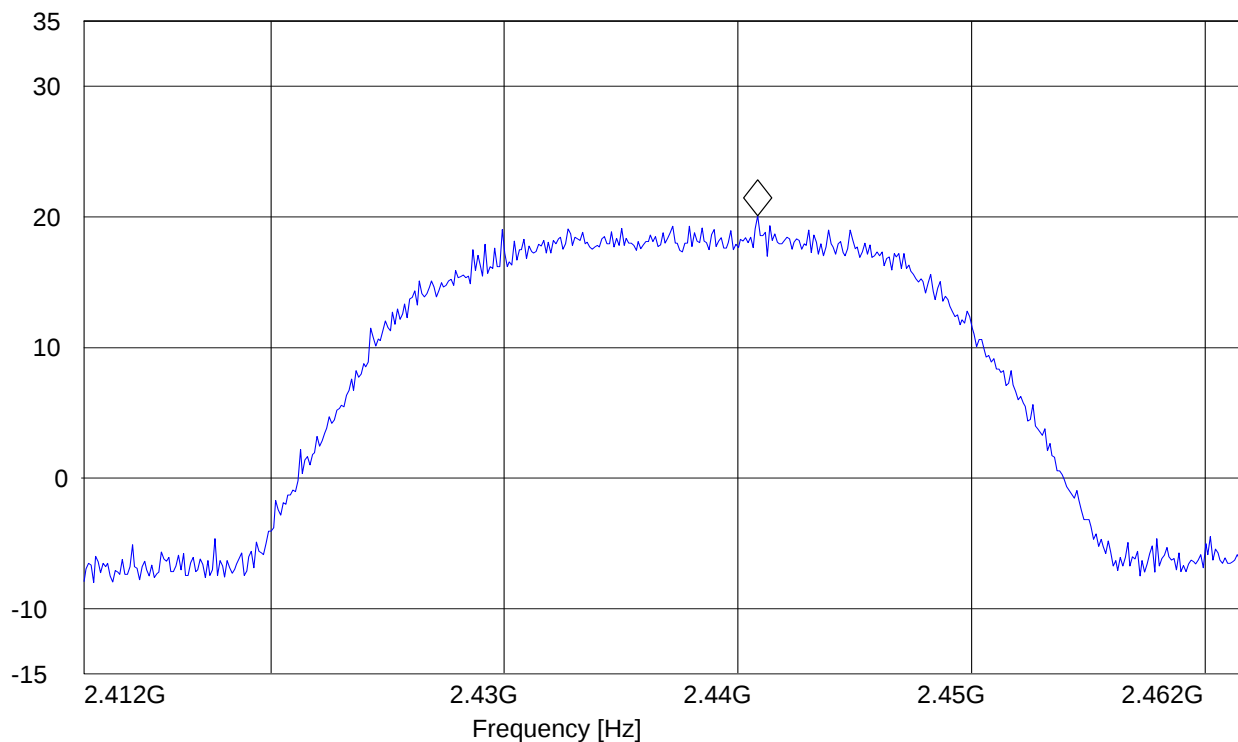
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "EIRP RLAN CH6"

Short Description:		EIRP RLAN channel-2437 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.440845691 GHz 20.08 dBm

Level [dBm]



EIRP 802.11n HT20 2462MHz

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

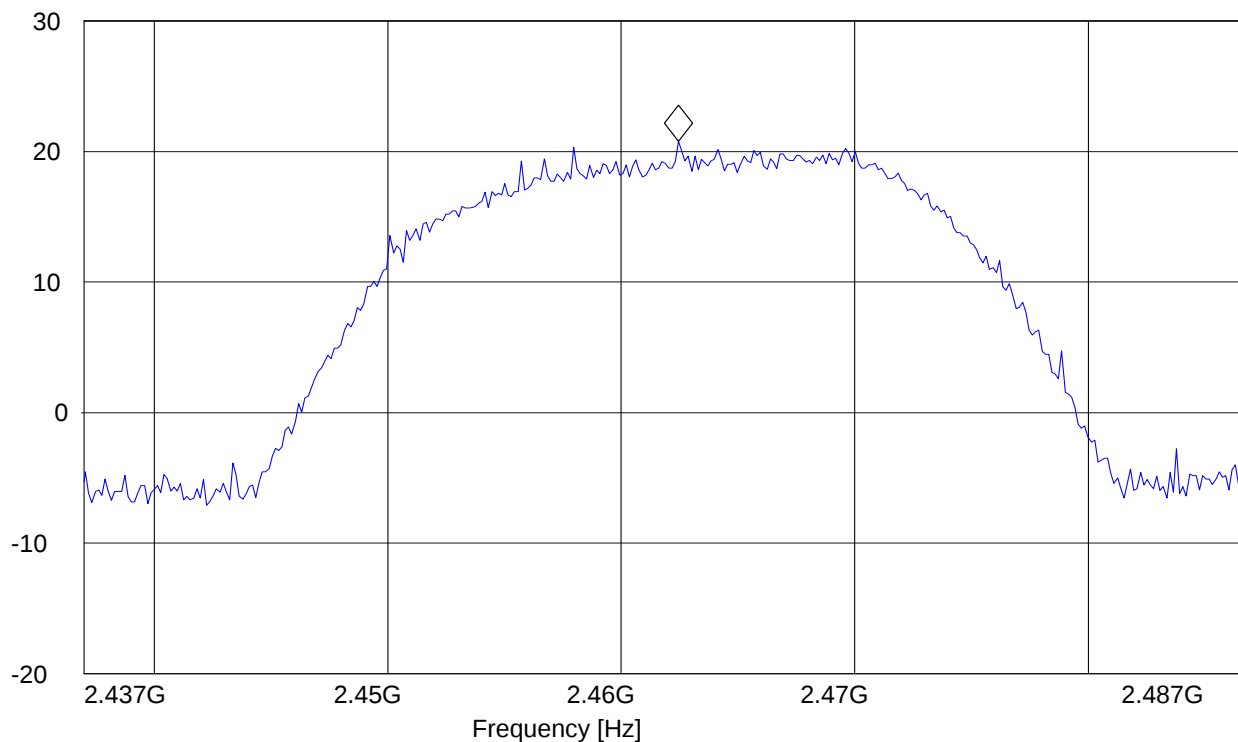
SWEEP TABLE: "EIRP RLAN CH11"

Short Description:		EIRP RLAN channel-2462 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.462450902 GHz

20.77 dBm

Level [dBm]



EIRP 802.11n HT40 2422MHz

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

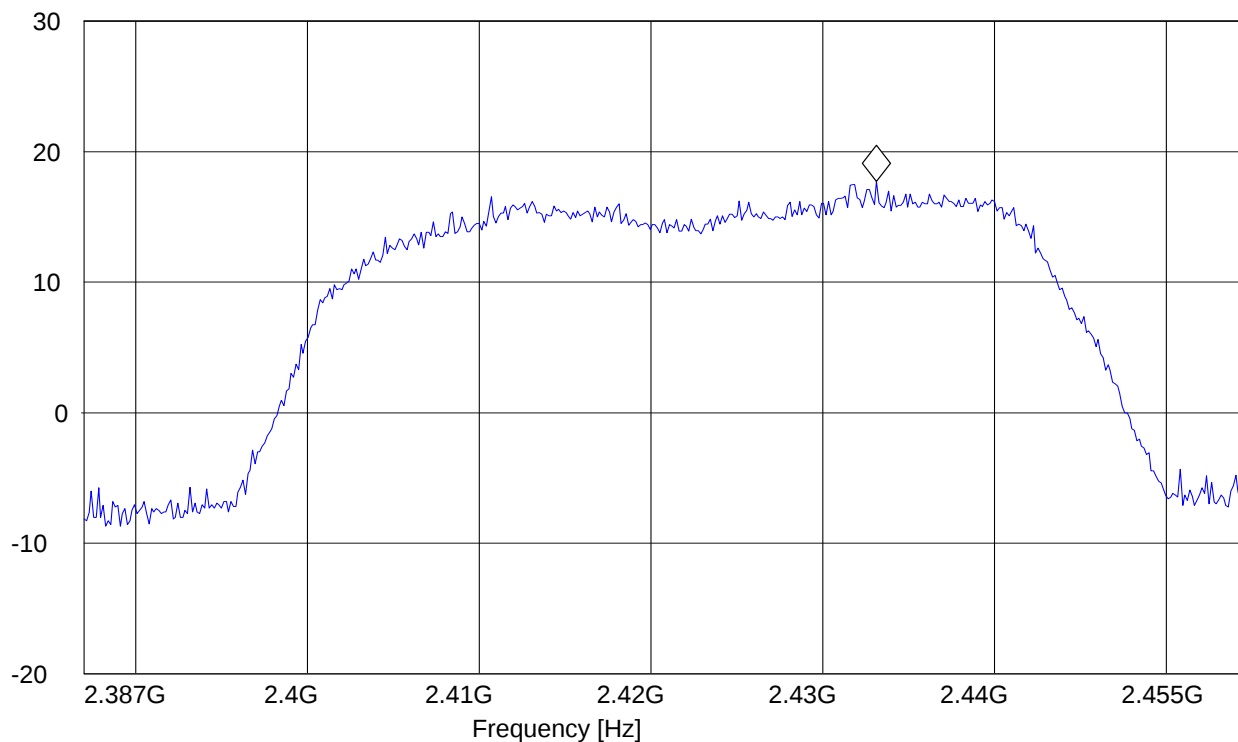
SWEEP TABLE: "EIRP RLAN CH1"

Short Description:		EIRP RLAN channel-2412 MHz			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency				
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.433152305 GHz

17.71 dBm

Level [dBm]



EIRP 802.11n HT40 2437MHz

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

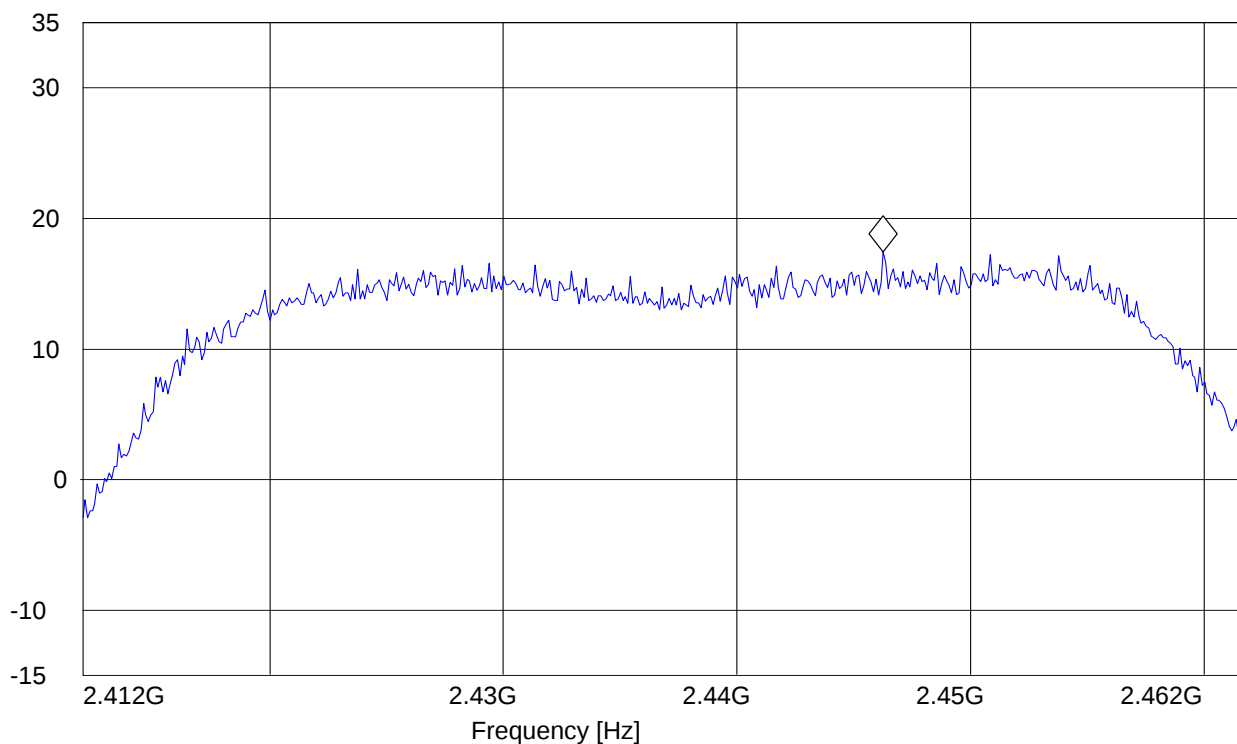
SWEEP TABLE: "EIRP RLAN CH6"

Short Description:		EIRP RLAN channel-2437 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.446264529 GHz

17.44 dBm

Level [dBm]



EIRP 802.11n HT40 2452MHz

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 10
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

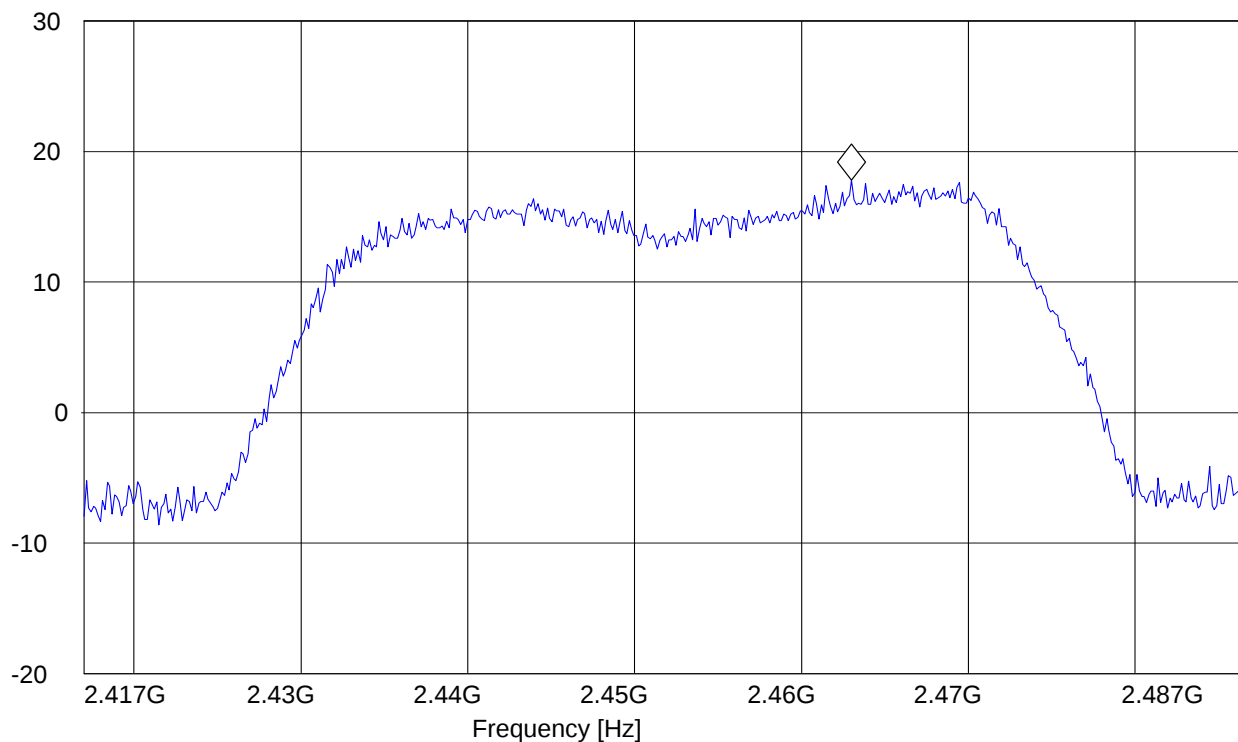
SWEEP TABLE: "EIRP RLAN CH11"

Short Description:		EIRP RLAN channel-2462 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
2.4 GHz	2.5 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM
		MaxPeak			

Marker: 2.463012024 GHz

17.81 dBm

Level [dBm]



EIRP 802.11n HT20 5745MHz

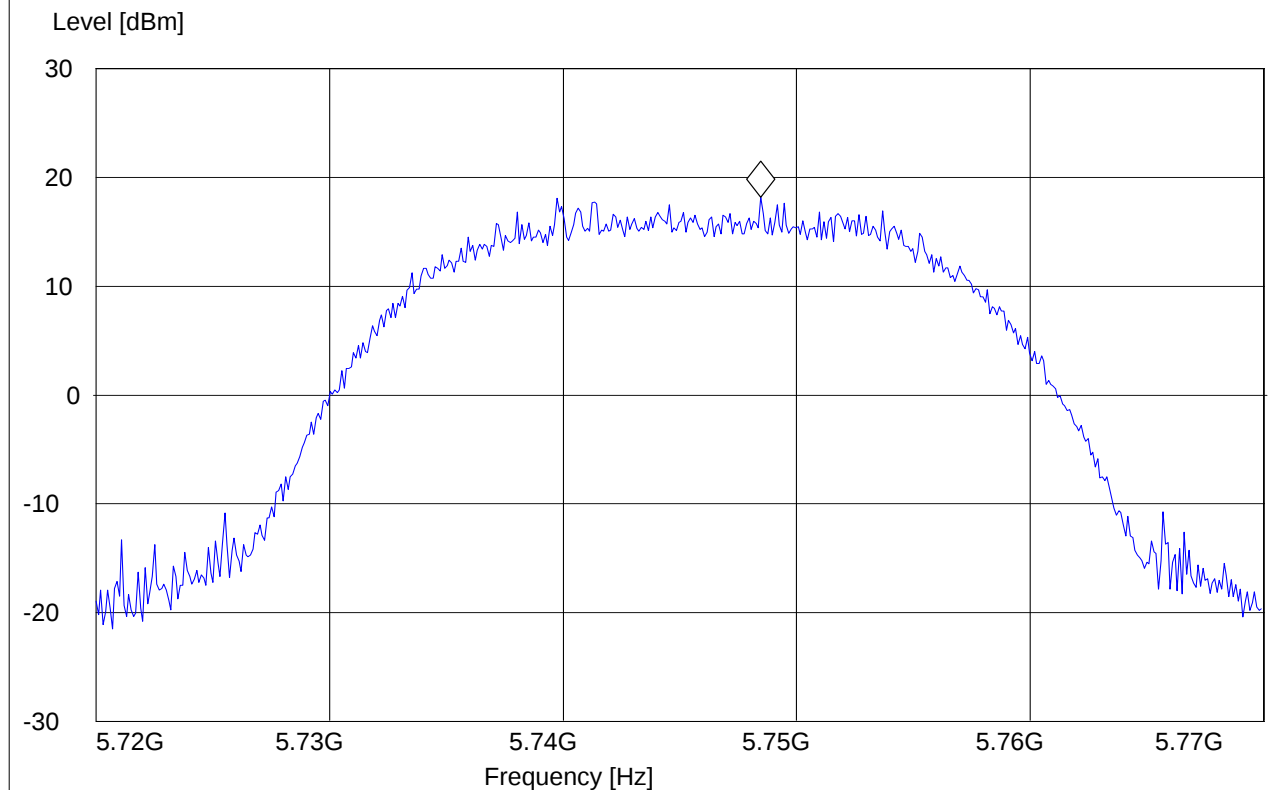
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 149
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "EIRP 802.11a_149"

Short Description:		EIRP channel-5260 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
5.7 GHz	5.8 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM

Marker: 5.748456914 GHz

18.16 dBm



EIRP 802.11n HT20 5785MHz

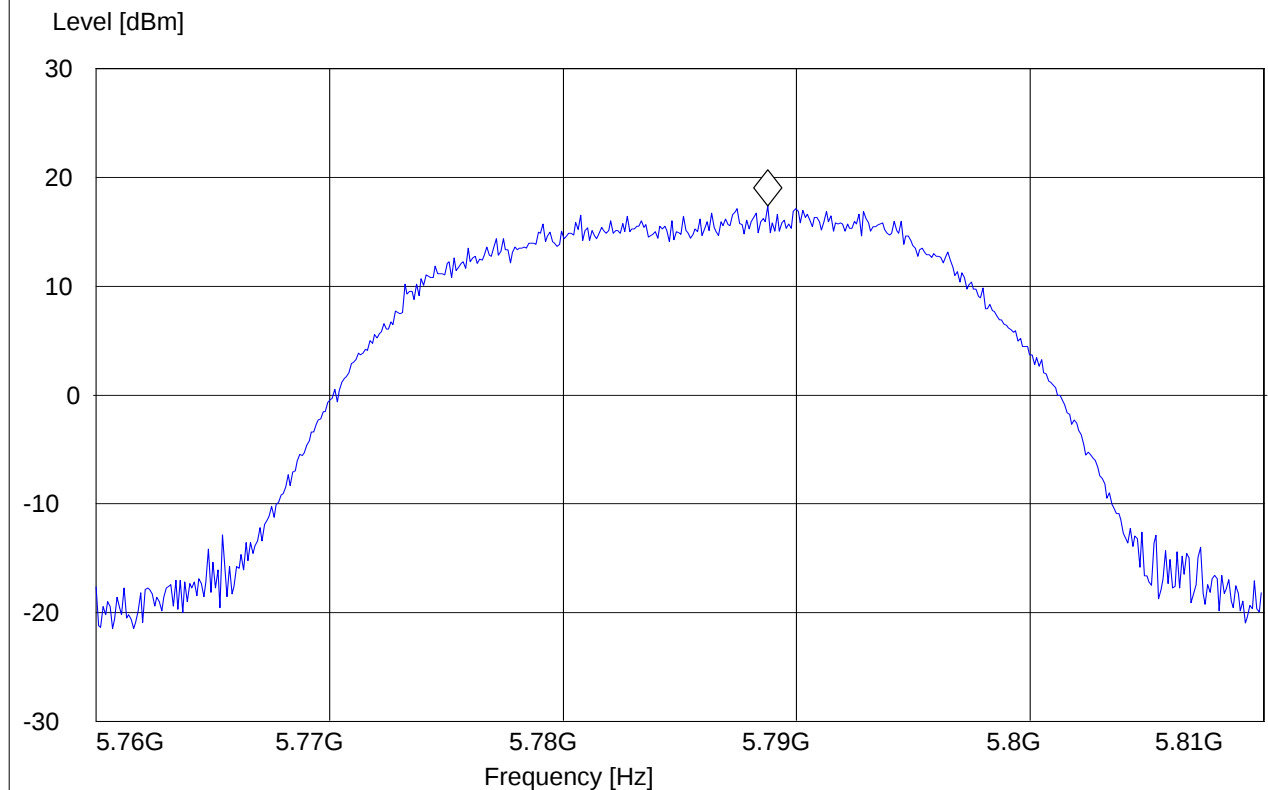
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "EIRP 802.11a_157"

Short Description:		EIRP channel-5260 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
5.8 GHz	5.8 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM

Marker: 5.788757515 GHz

17.38 dBm



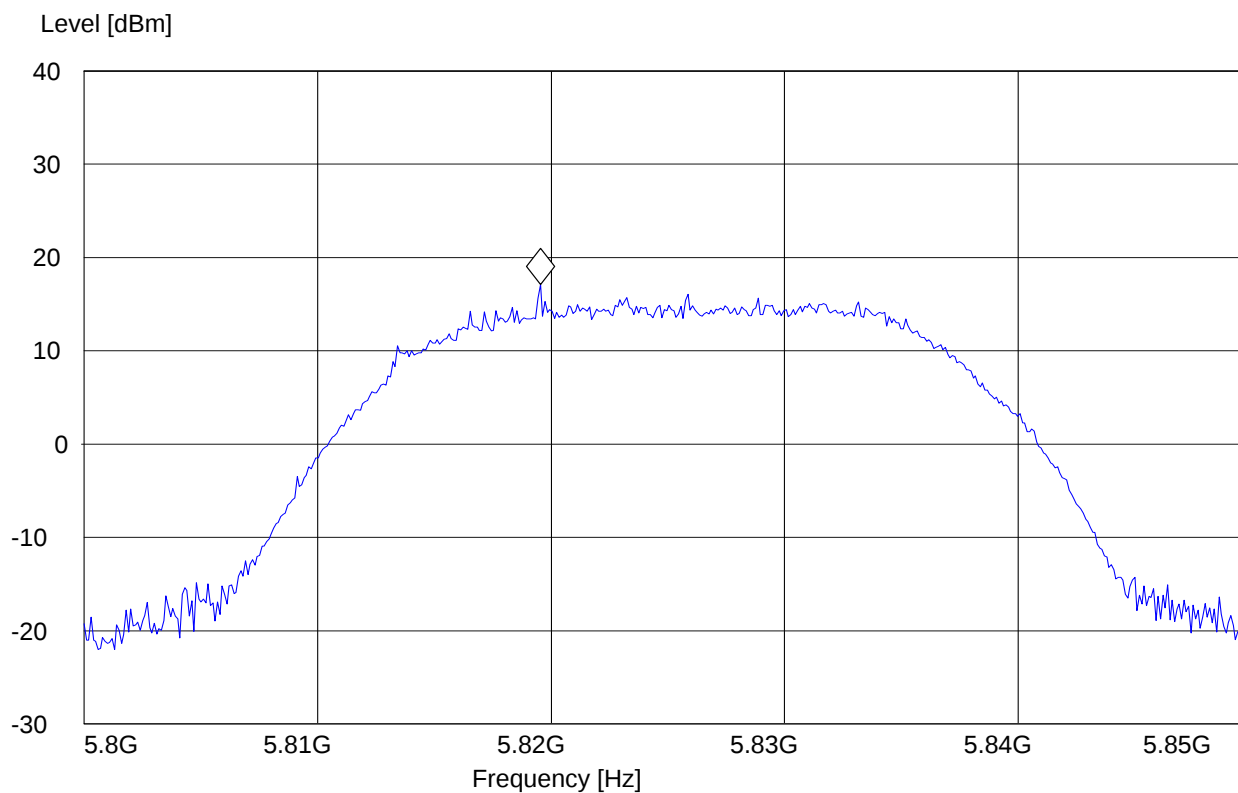
EIRP 802.11n HT20 5825MHz

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 165
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "EIRP 802.11a_165"

Short Description:		EIRP channel-5260 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
5.8 GHz	5.9 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM

Marker: 5.819539078 GHz 17.1 dBm



EIRP 802.11n HT40 5755MHz

EUT / Description: Laptop
Manufacturer: Sony
Operation Mode: 802.11n40 CH151
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: SAM
Voltage: AC
Comments::

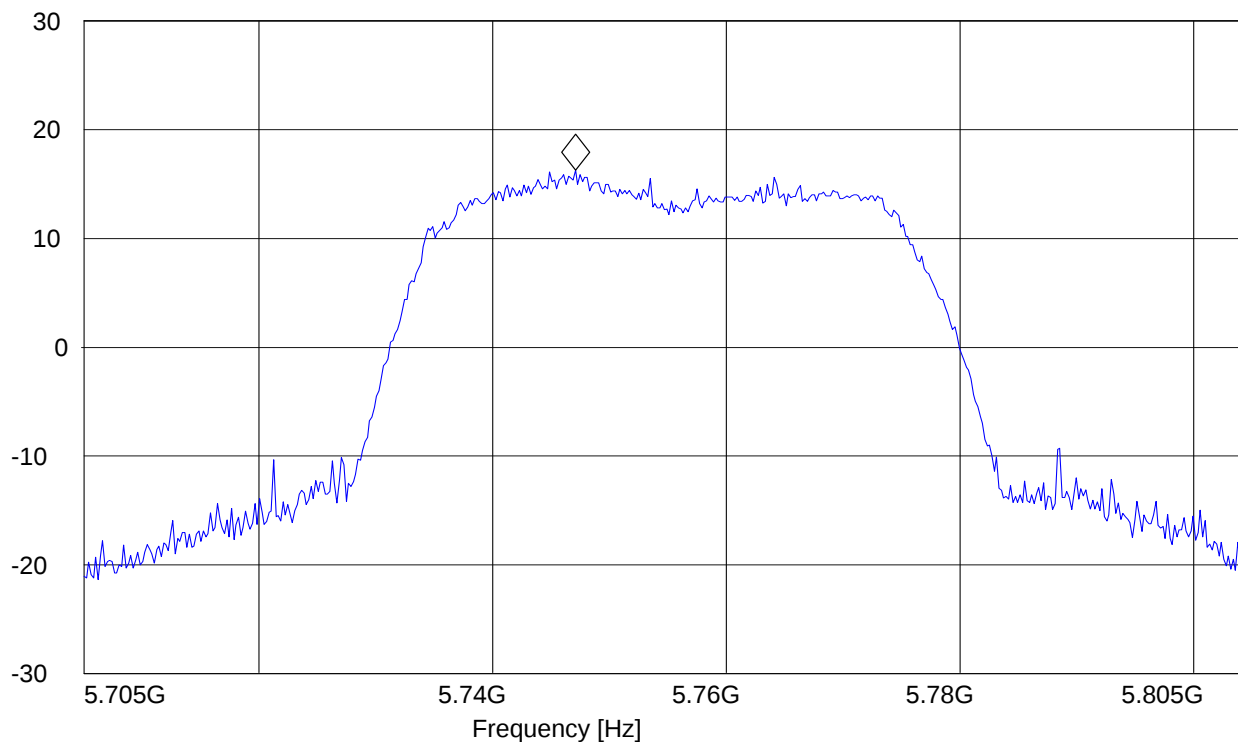
SWEEP TABLE: "EIRP 802.11a_151"

Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
5.7 GHz	5.8 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM

Marker: 5.747084168 GHz

16.27 dBm

Level [dBm]



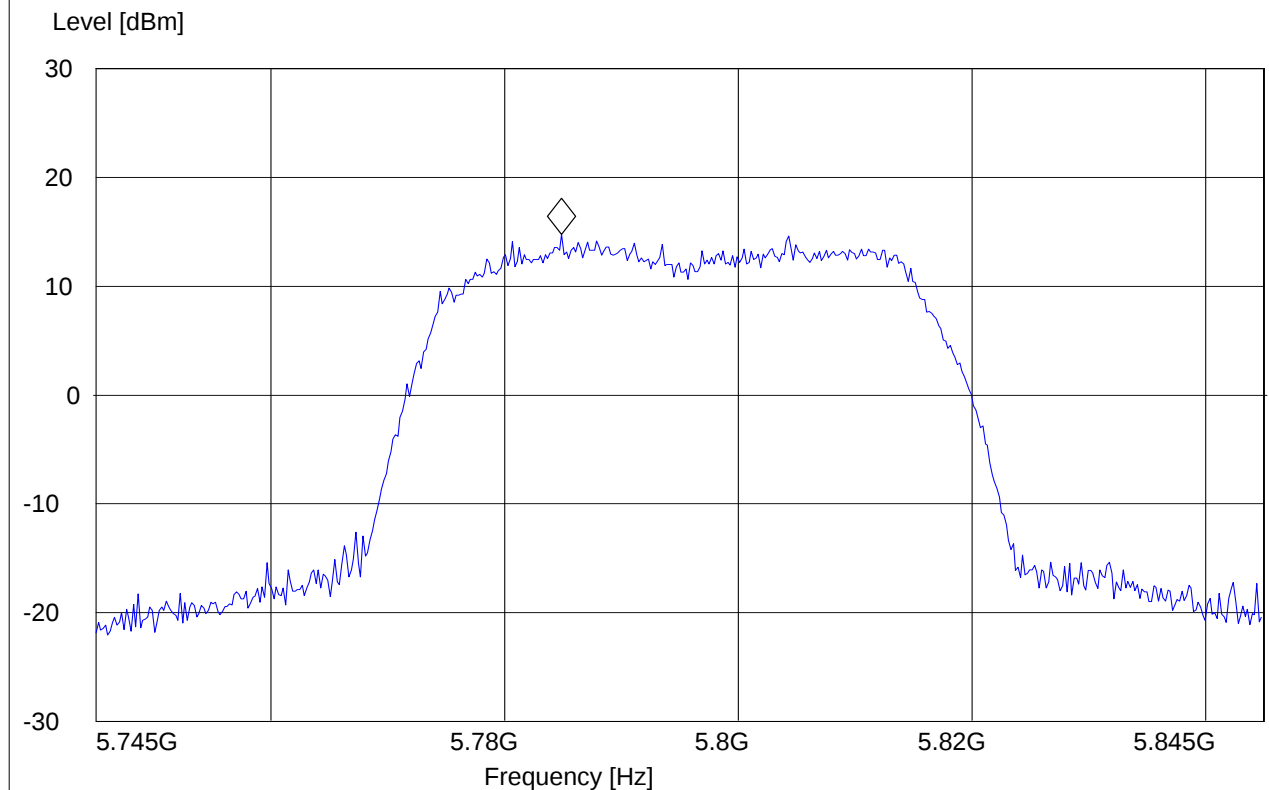
EIRP 802.11n HT40 5795MHz

EUT: Laptop
Manufacturer: Sony
Test Mode: 802.11n40 CH 159
ANT Orientation:: H
EUT Orientation:: H
Test Engineer:: Sam
Power Supply: : AC
Comments: :

SWEEP TABLE: "EIRP 802.11a_159"

Short Description:		EIRP channel-5260 MHz			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
5.7 GHz	5.8 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM

Marker: 5.78487976 GHz 14.77 dBm



5.2 Restricted Band Edge Compliance §15.247/15.205

5.2.1 Limits

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

***PEAK LIMIT= 74dBuV/m**

***AVG. LIMIT= 54dBuV/m**

Notes:

1. Radiated emissions are maximized by rotating the EUT 360° at 0.5 meter height increments between 1 and 4 meters.
2. Measurements were performed with the EUT in X, Y and Z orientations with the measurement antenna in both horizontal and vertical polarity. The plots below show the results of the worst case orientation and polarity.

5.2.2 Sub-band 1 802.11b MODE**Lower band edge PEAK**

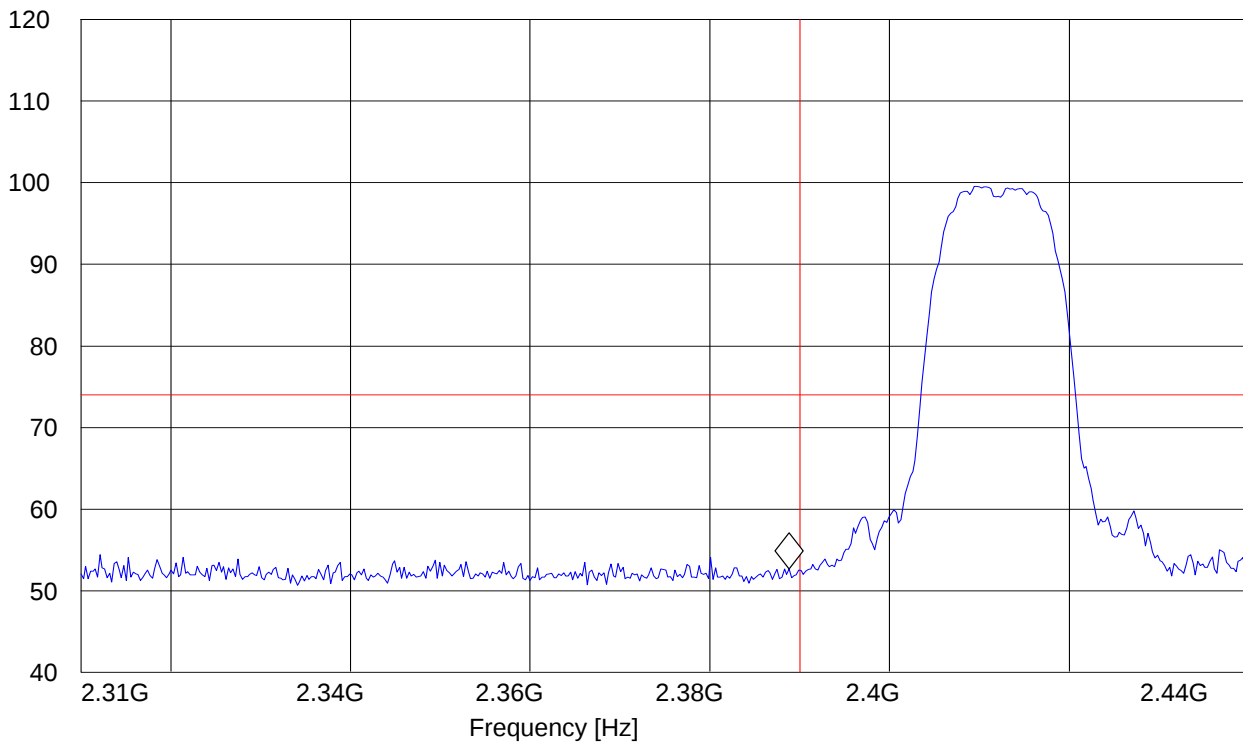
EUT: Laptop
Customer:: Sony
Test Mode: 802.11b CH1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 LBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.388829659 GHz 52.67 dB μ V/m

Level [dB μ V/m]



Lower band edge Average

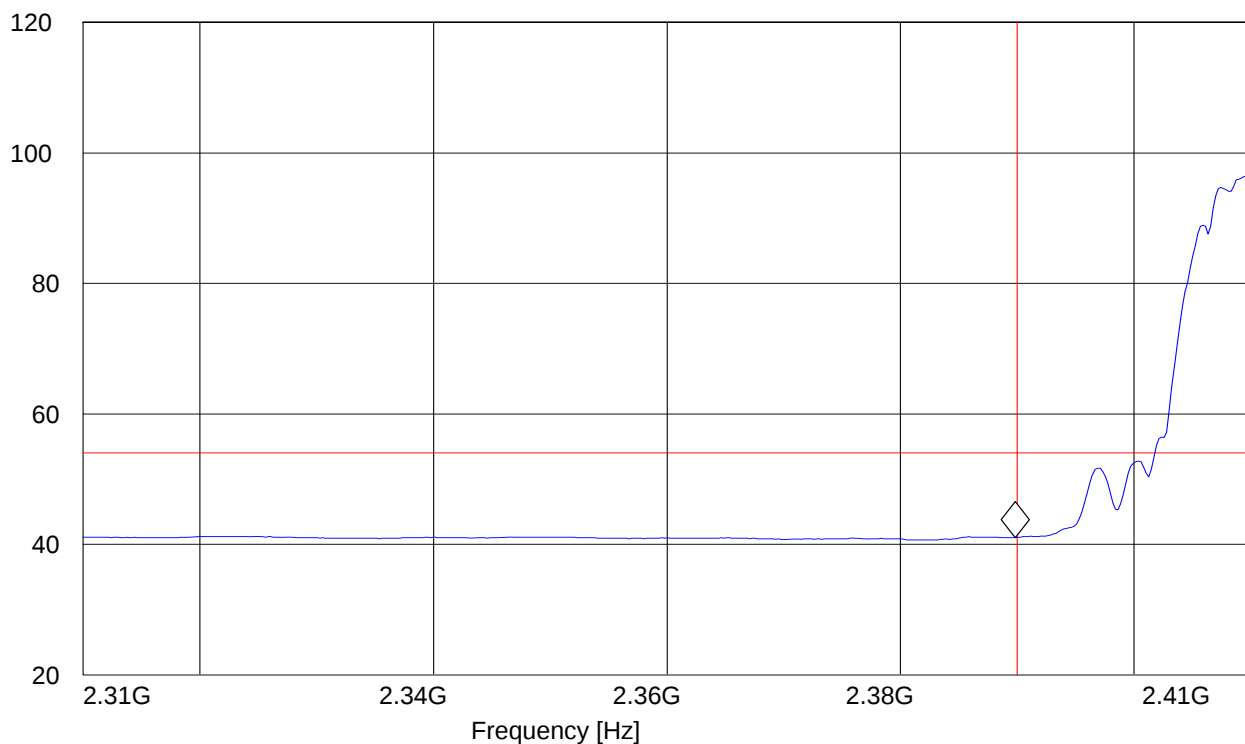
EUT: Laptop
Customer:: Sony
Test Mode: 802.11b CH1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 LBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.389799599 GHz 41.08 dB μ V/m

Level [dB μ V/m]



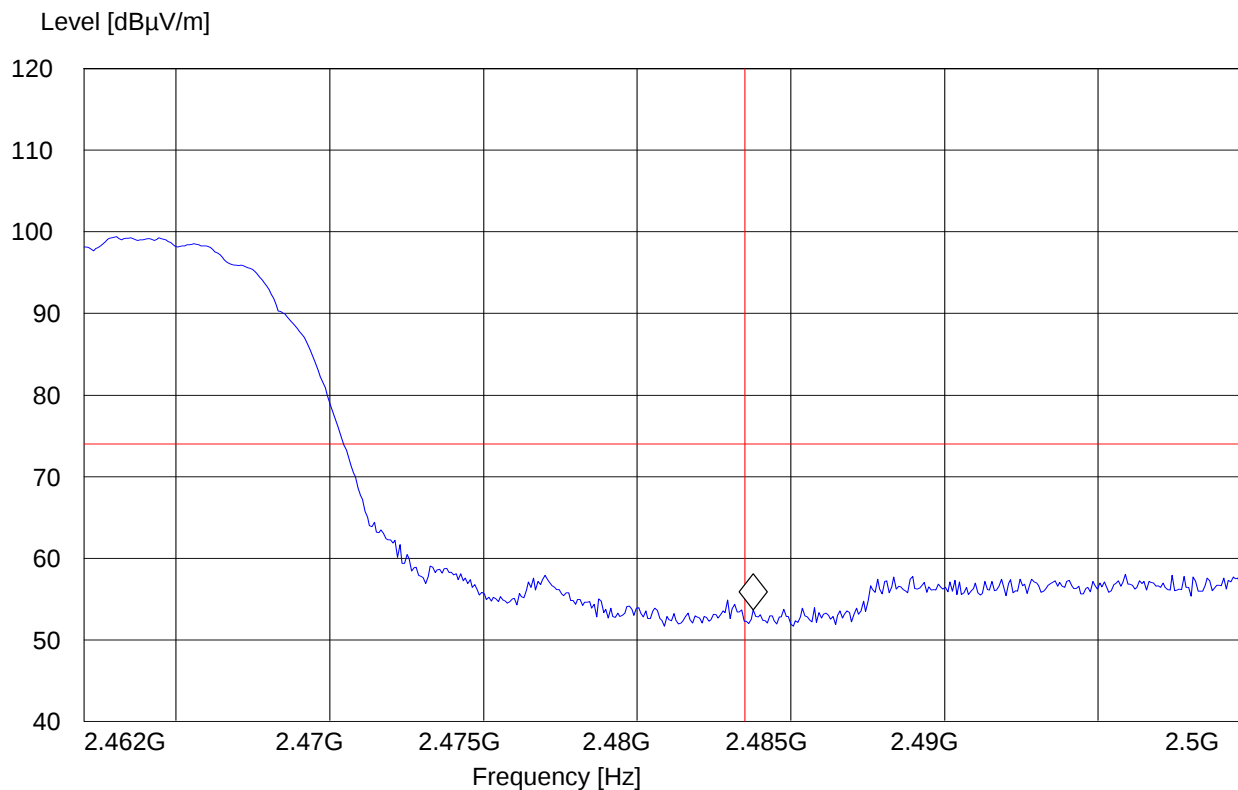
High band edge PEAK

EUT: Laptop
Customer:: Sony
Test Mode: 802.11b CH11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 HBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert
		MaxPeak			

Marker: 2.483779559 GHz 53.65 dB μ V/m



High band edge Average

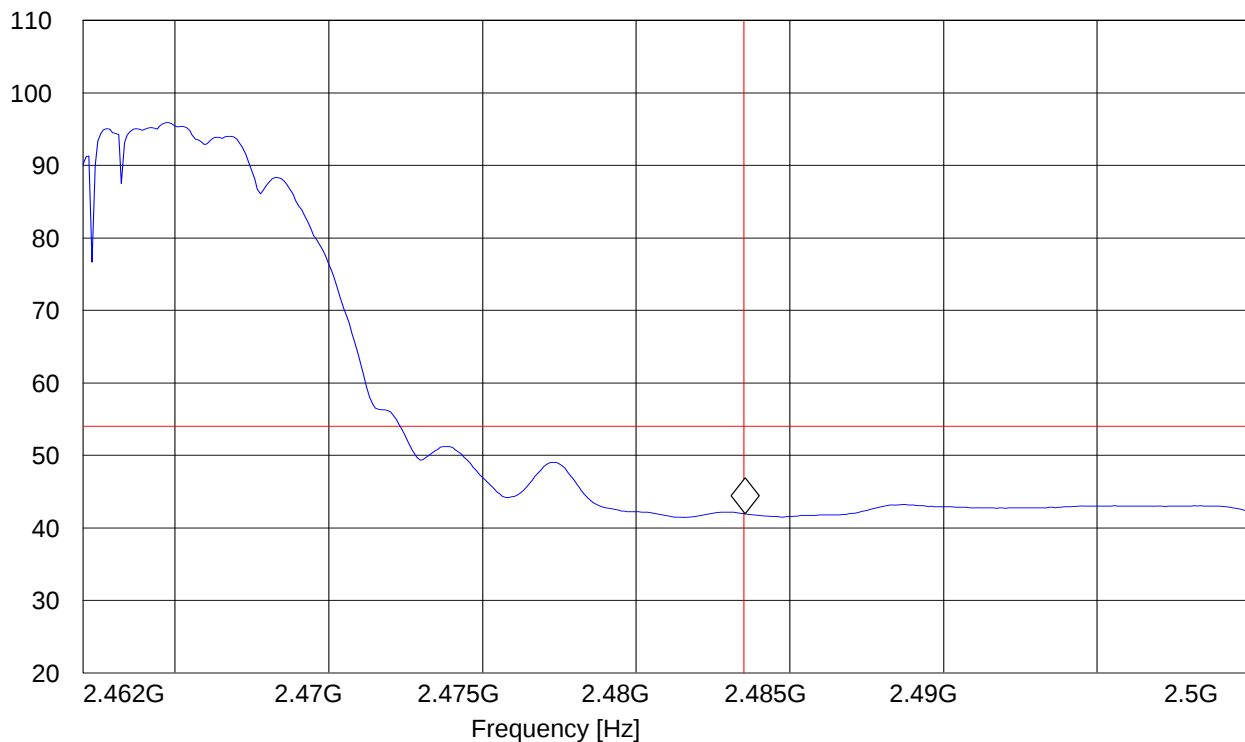
EUT: Laptop
Customer:: Sony
Test Mode: 802.11b CH11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 HBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

Marker: 2.483547094 GHz 41.96 dB μ V/m

Level [dB μ V/m]



5.2.3 Sub-band 1 802.11g MODE**Lower band edge PEAK**

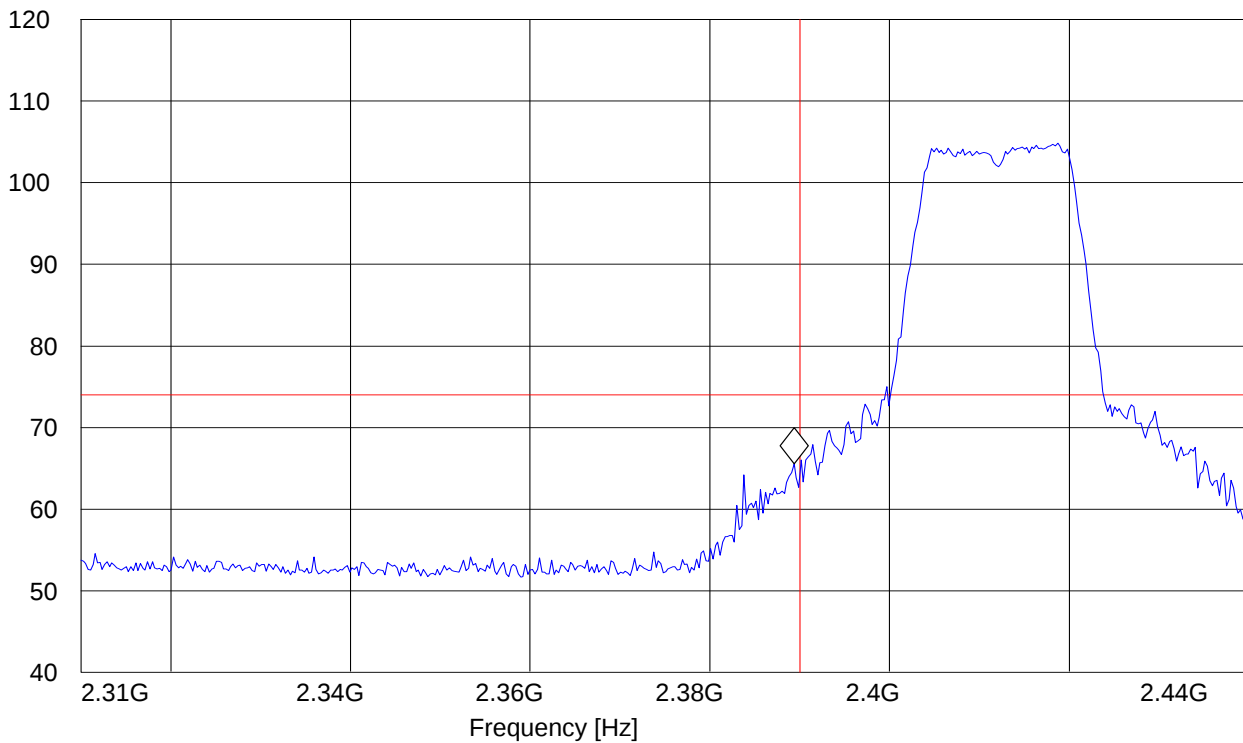
EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 LBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.389358717 GHz 65.57 dB μ V/m

Level [dB μ V/m]



Lower band edge Average

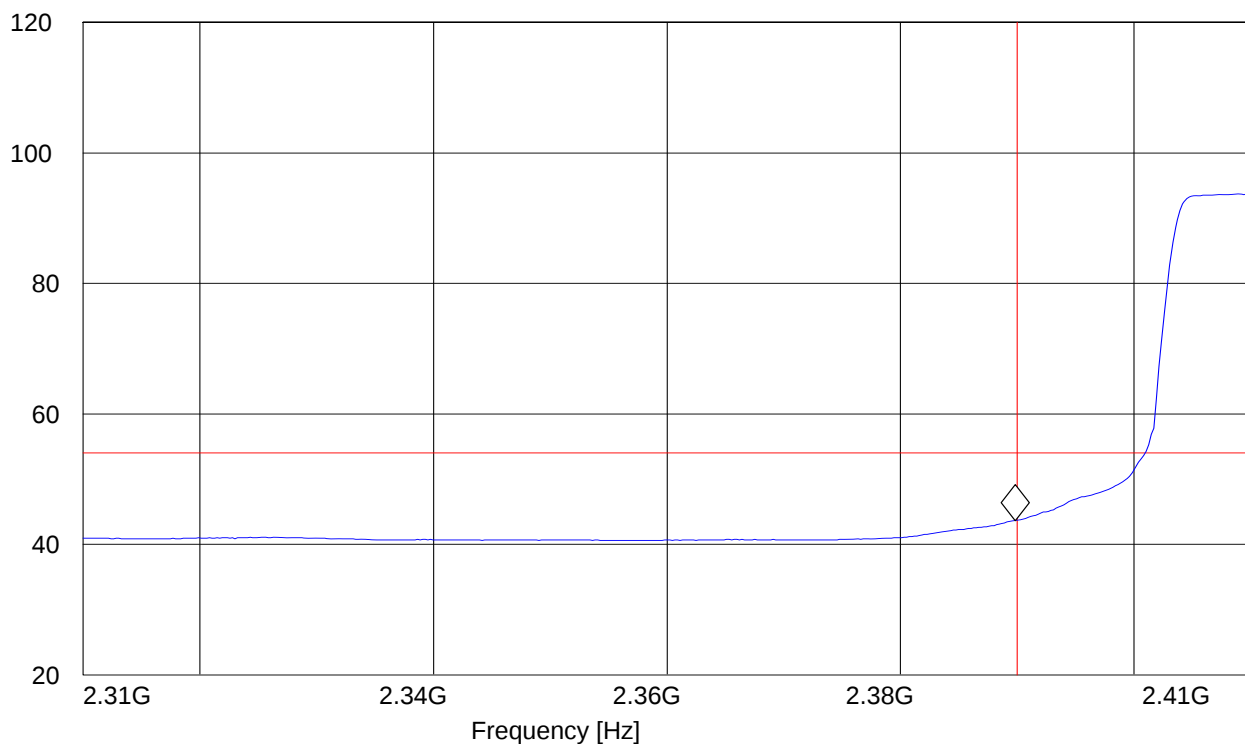
EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 LBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.389799599 GHz 43.68 dB μ V/m

Level [dB μ V/m]



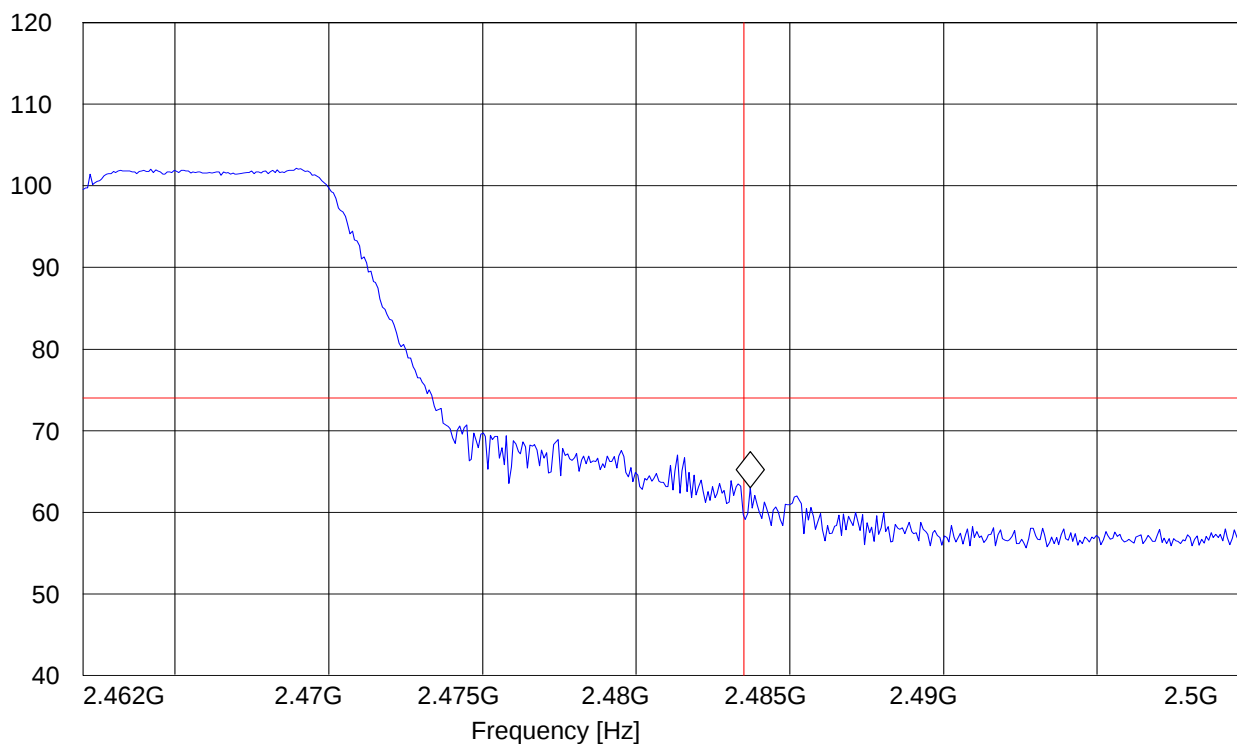
High band edge PEAK

EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 HBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.483703407 GHz

62.99 dB μ V/mLevel [dB μ V/m]

High band edge Average

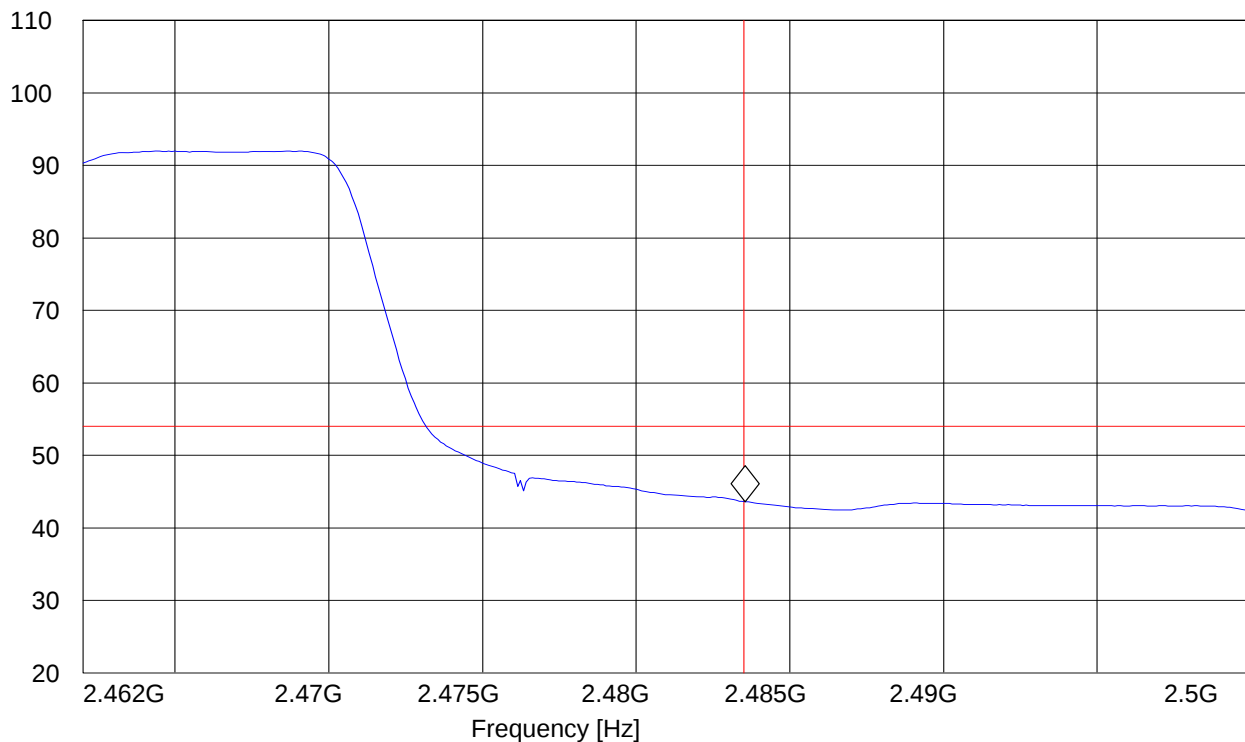
EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 HBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

Marker: 2.483547094 GHz 43.65 dBμV/m

Level [dBμV/m]



5.2.4 Sub-band 1 802.11n HT20 MODE**Lower band edge PEAK**

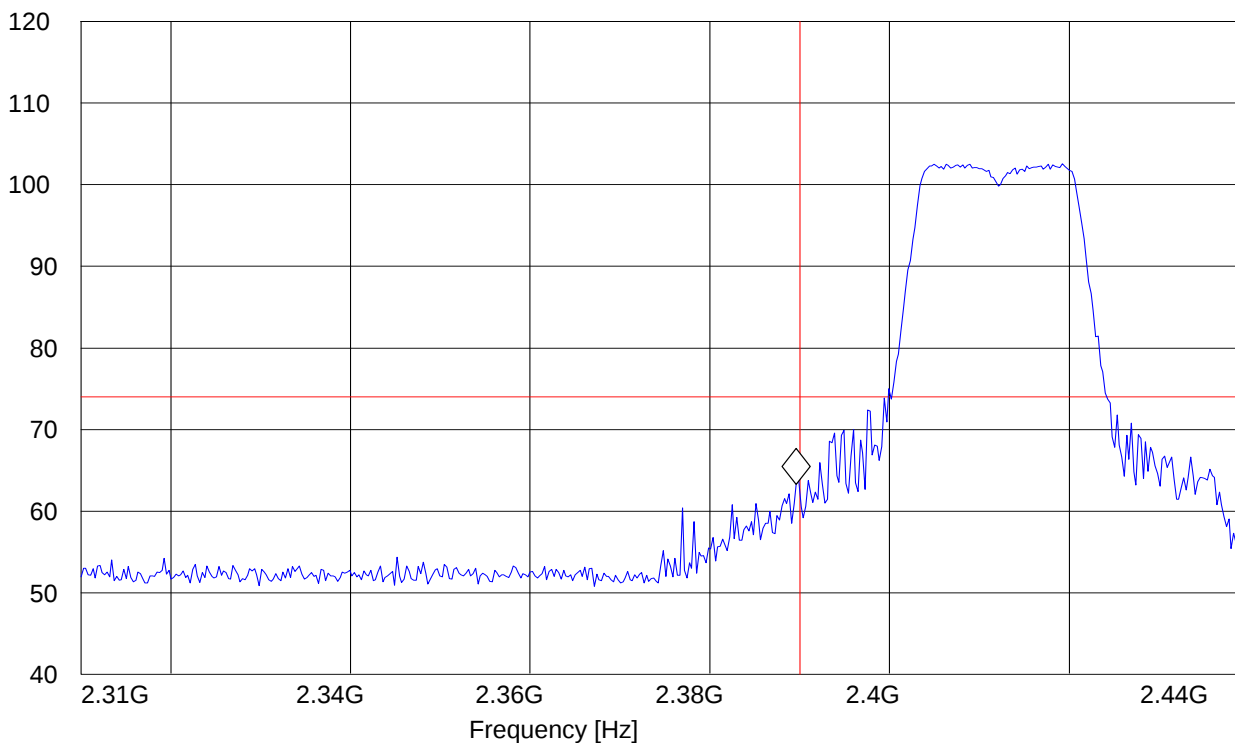
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 LBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.389623246 GHz 63.27 dB μ V/m

Level [dB μ V/m]



Lower band edge Average

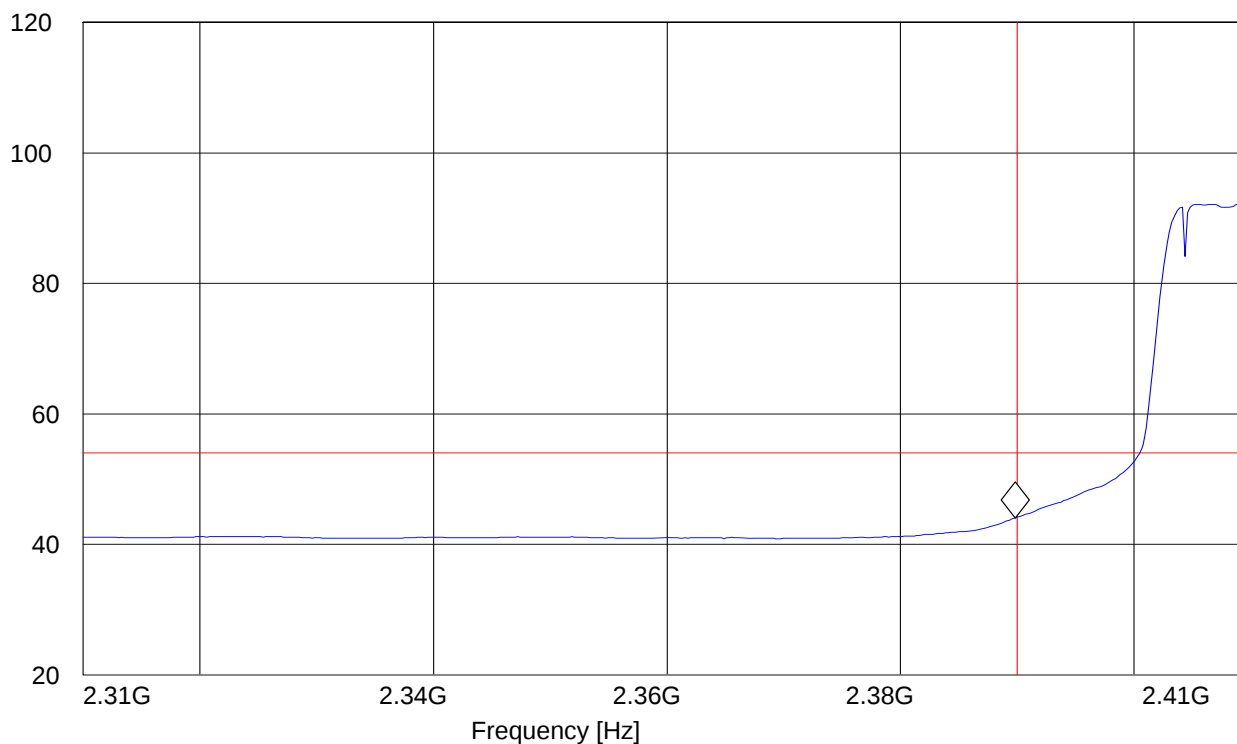
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 LBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.389799599 GHz 44.04 dB μ V/m

Level [dB μ V/m]



High band edge PEAK

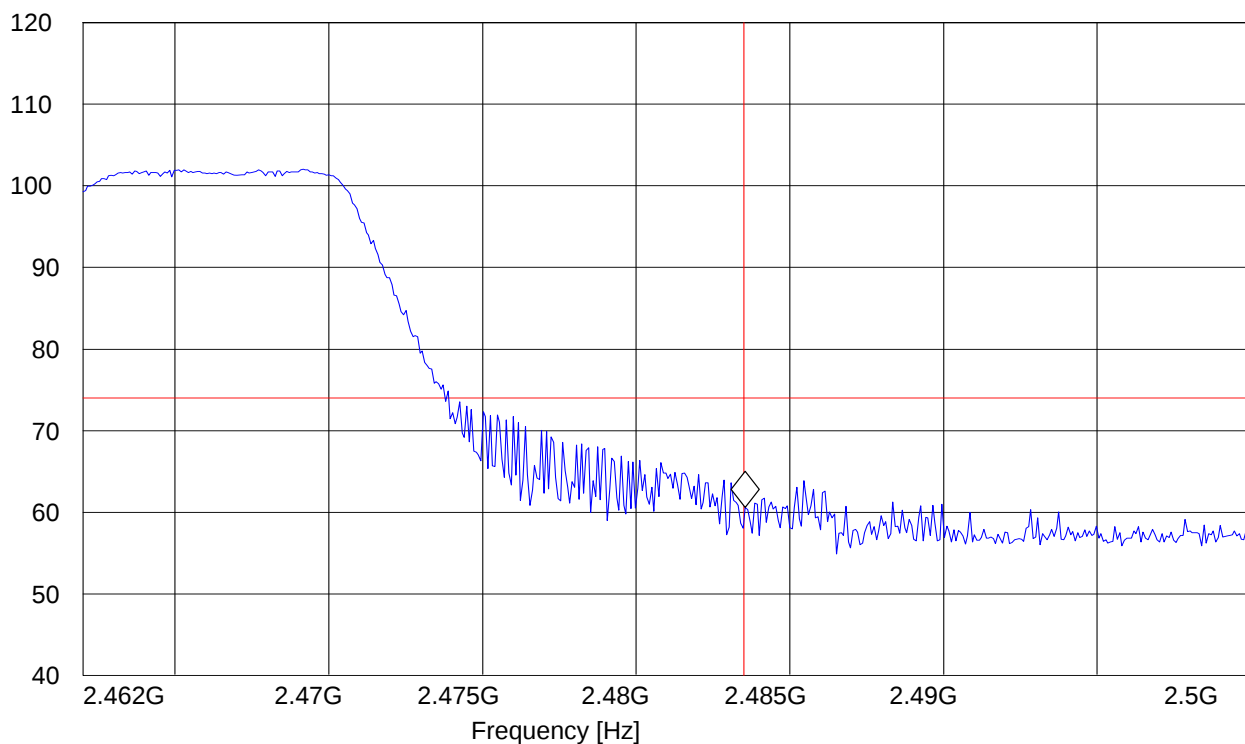
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 HBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert
		MaxPeak			

Marker: 2.483551102 GHz 60.57 dB μ V/m

Level [dB μ V/m]



High band edge Average

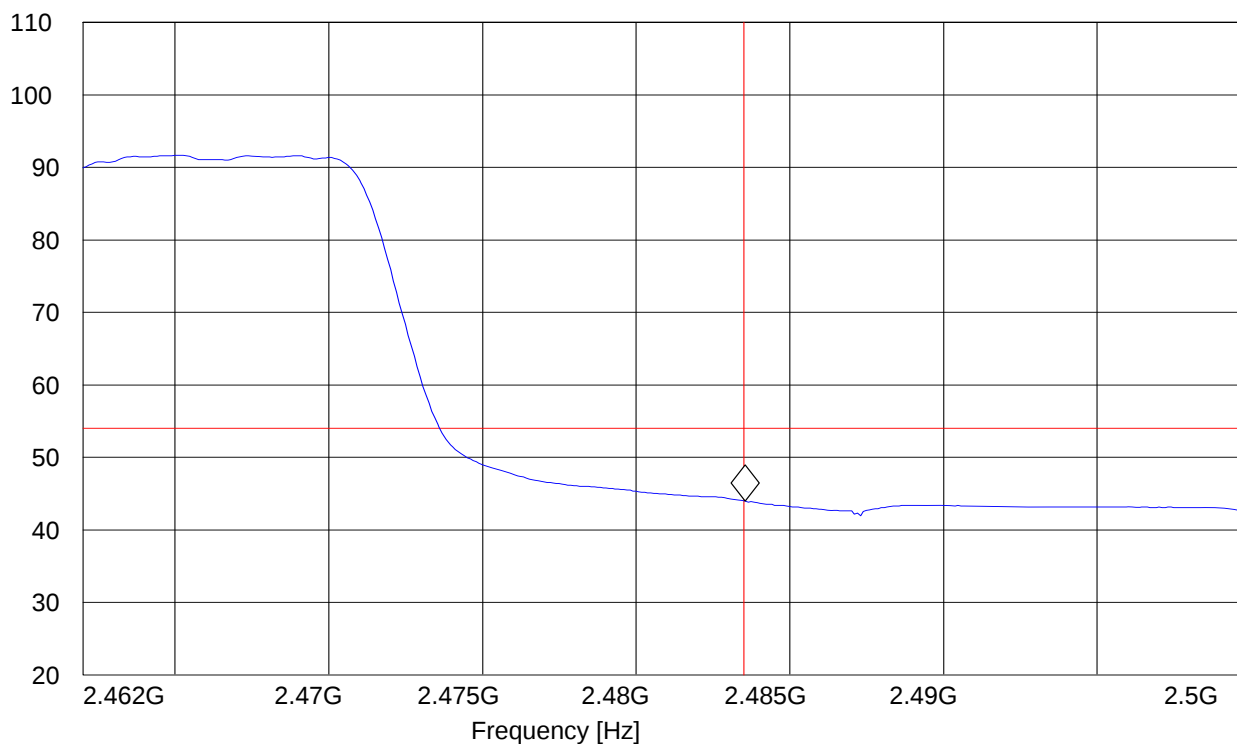
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 HBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

Marker: 2.483547094 GHz 43.95 dB μ V/m

Level [dB μ V/m]



5.2.5 Sub-band 1 802.11n HT40 MODE**Lower band edge PEAK**

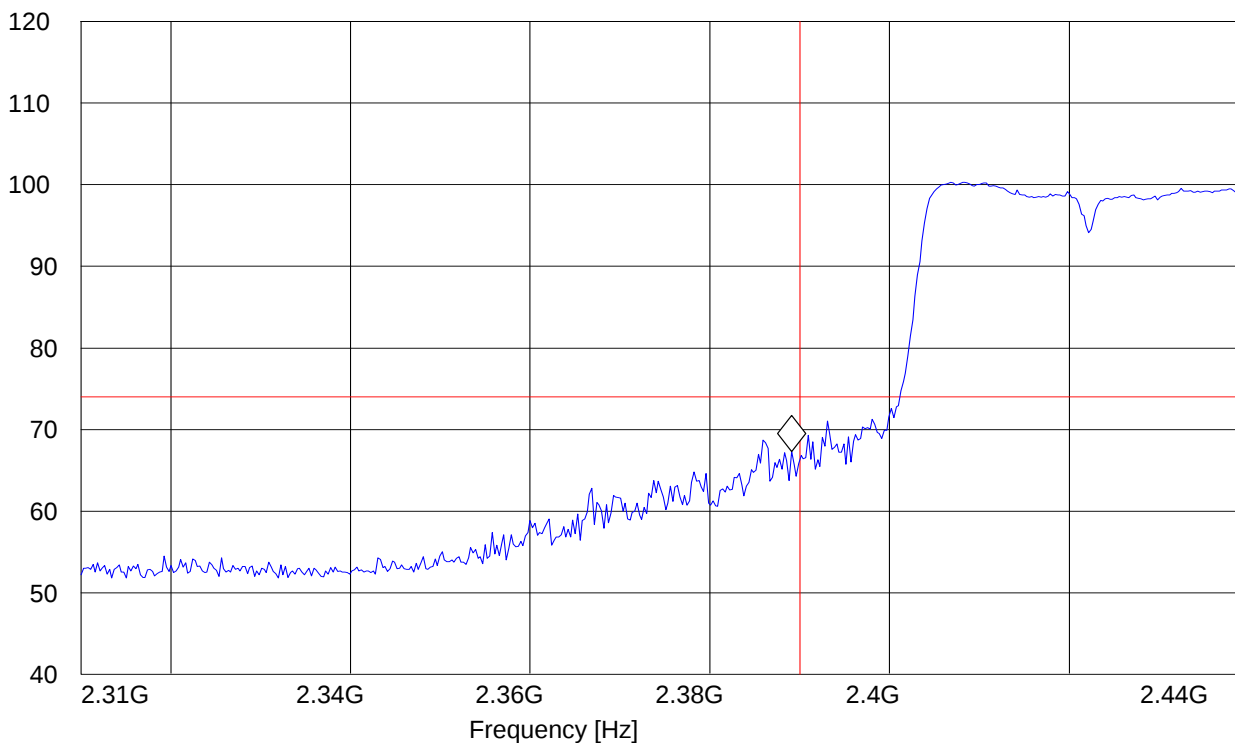
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 LBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.389094188 GHz 67.32 dB μ V/m

Level [dB μ V/m]



Lower band edge Average

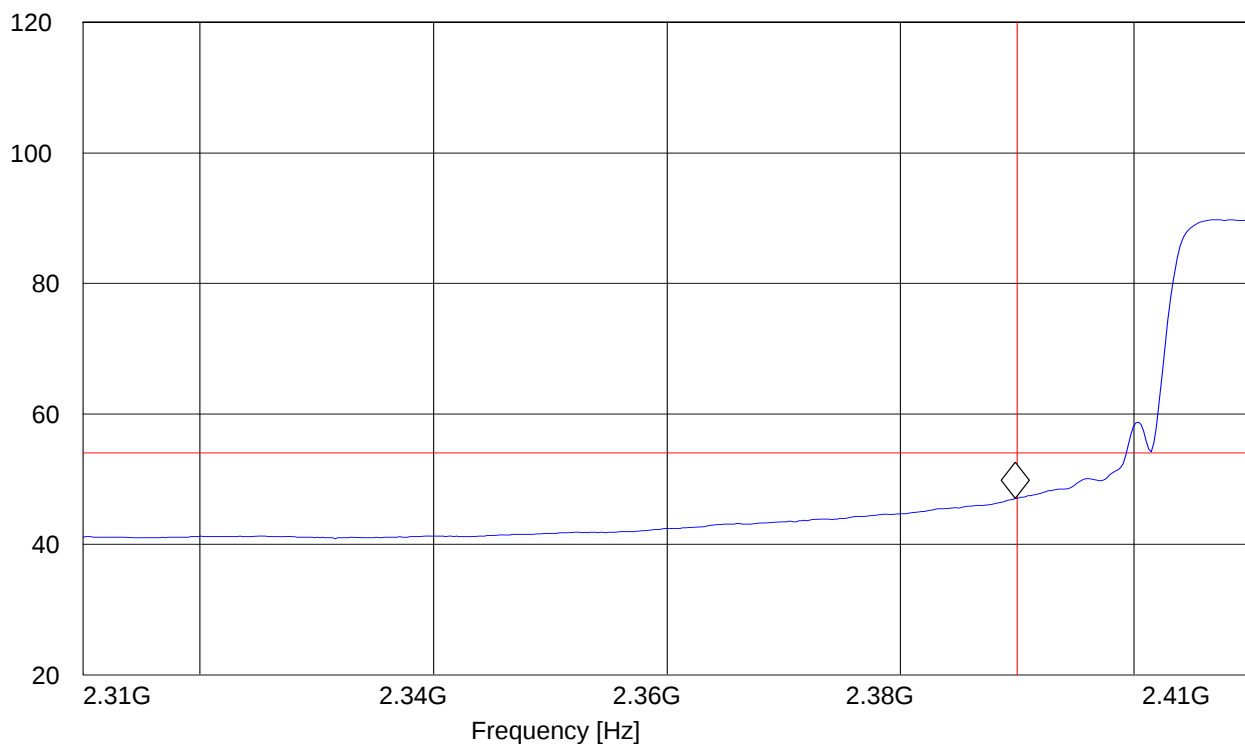
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 LBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.389799599 GHz 47.04 dB μ V/m

Level [dB μ V/m]



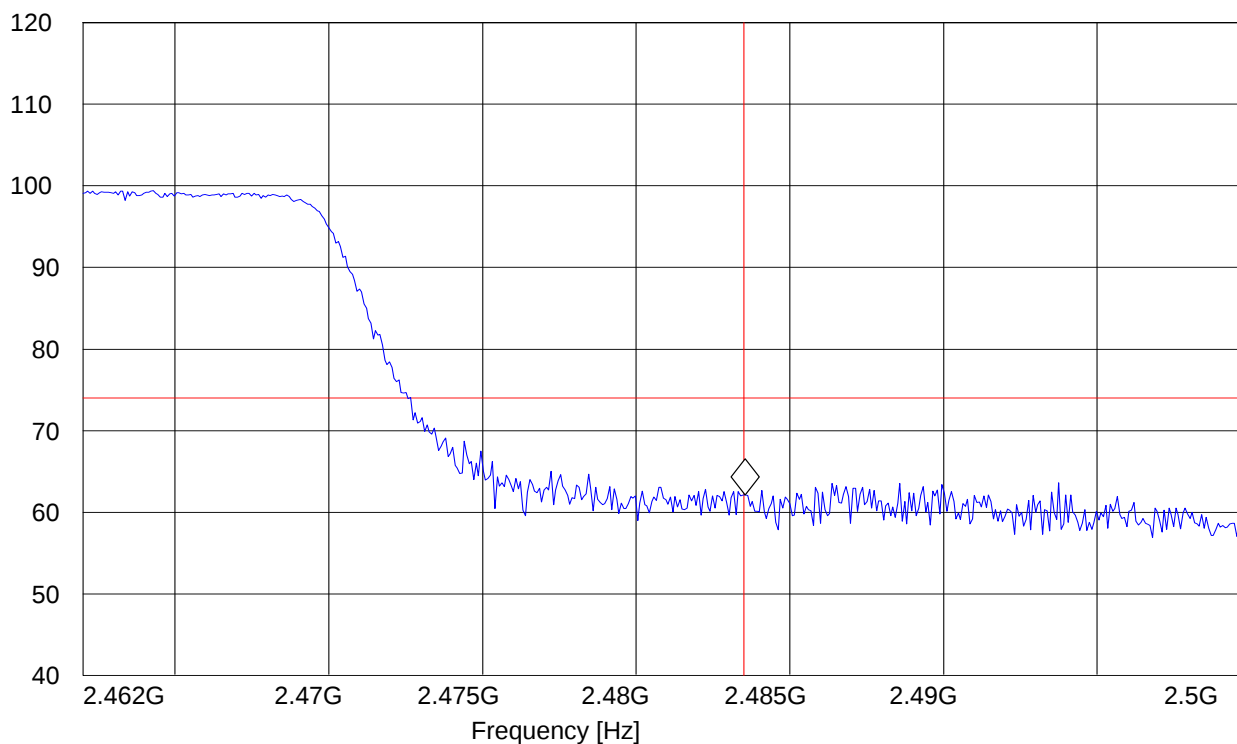
High band edge PEAK

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 HBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.483551102 GHz

62.1 dB μ V/mLevel [dB μ V/m]

High band edge Average

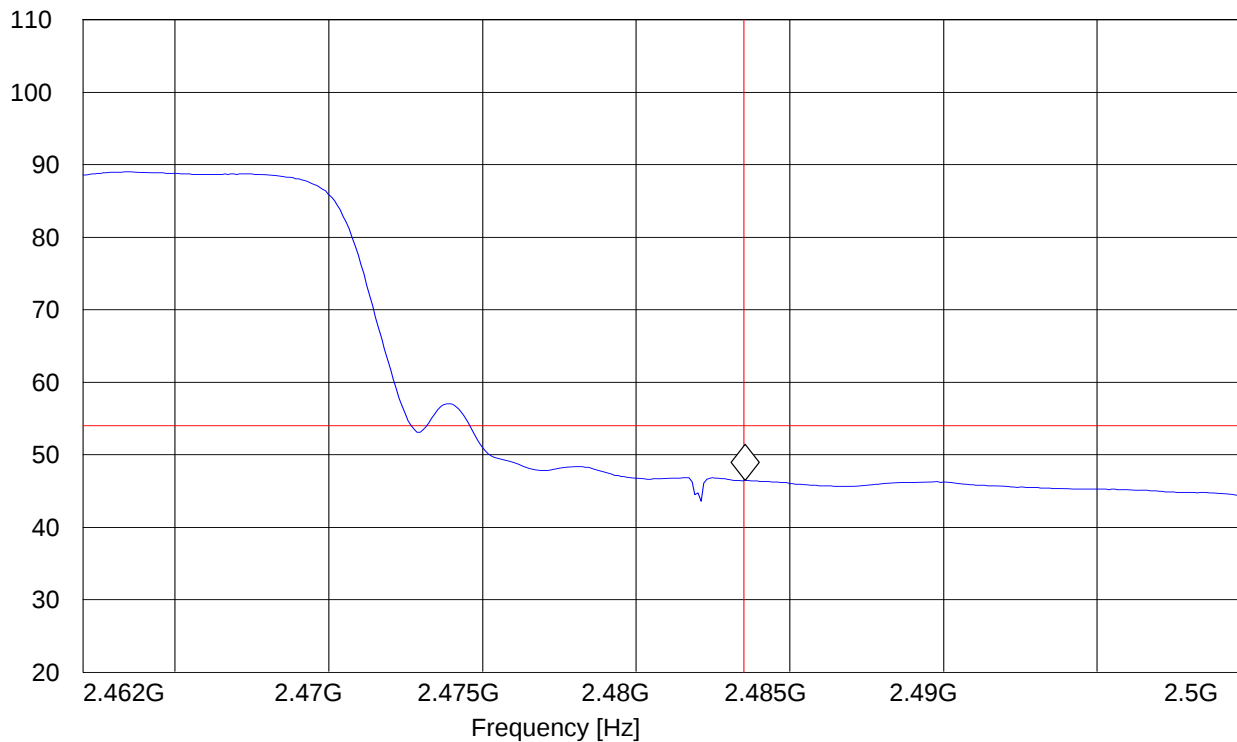
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247 HBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

Marker: 2.483547094 GHz 46.45 dB μ V/m

Level [dB μ V/m]



5.3 Transmitter Spurious Emission § 15.247/15.205/15.209

5.3.1 Limits

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

***PEAK LIMIT= 74dBuV/m**

***AVG. LIMIT= 54dBuV/m**

Notes:

1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.
2. All measurements are done in peak mode using an average limit , unless specified with the plots.
3. Radiated emissions are maximized by rotating the EUT 360° at 0.5 meter height increments between 1 and 4 meters.
4. Measurements were performed with the EUT in X, Y and Z orientations with the measurement antenna in both horizontal and vertical polarity. The plots below show the results of the worst case orientation and polarity

Results for the radiated measurements below 30MHz according § 15.33

Frequency	Measured values	Remarks
9KHz – 30MHz	No emissions found, caused by the EUT	This is valid for all the tested channels

5.3.2 RESULTS Sub-band 1 802.11b/g MODE

Transmitter spurious emission for 802.11b/g mode is measured in 802.11g mode, which has higher radiated power, and verified in 802.11b mode. All emissions reported here are worse cases.

30MHz – 1GHz, Antenna: Vertical

Note: This plot is valid for low, mid, high channels (worst-case plot).

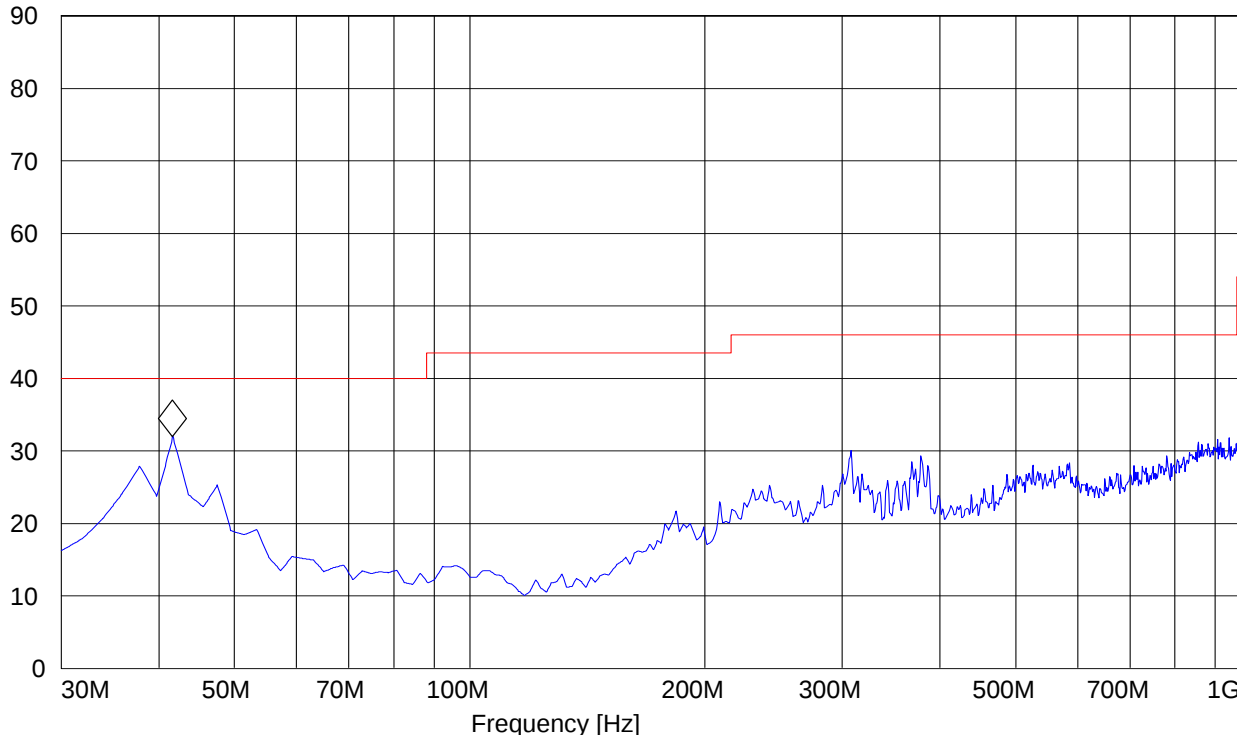
EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 6
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert

Marker: 41.663327 MHz 31.95 dB μ V/m

Level [dB μ V/m]



30MHz – 1GHz, Antenna: Horizontal

Note: This plot is valid for low, mid, high channels (worst-case plot).

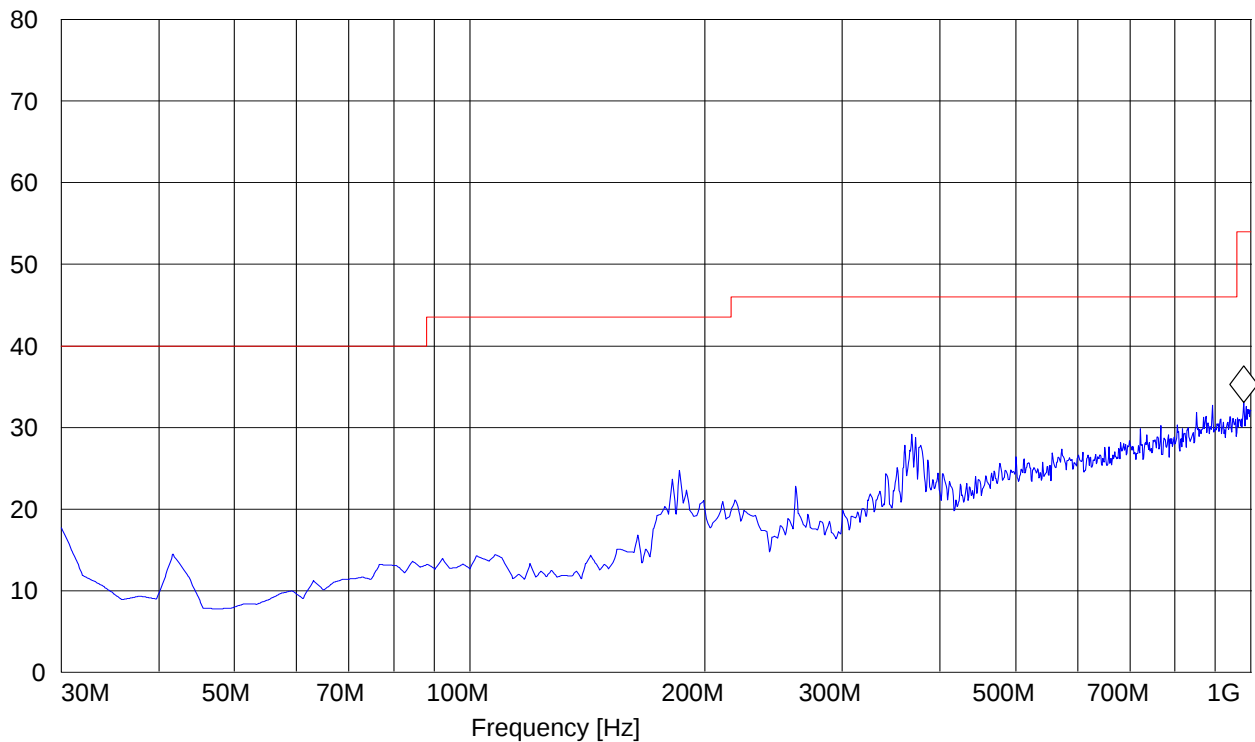
EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz

Marker: 978.617234 MHz 33.08 dB μ V/m

Level [dB μ V/m]



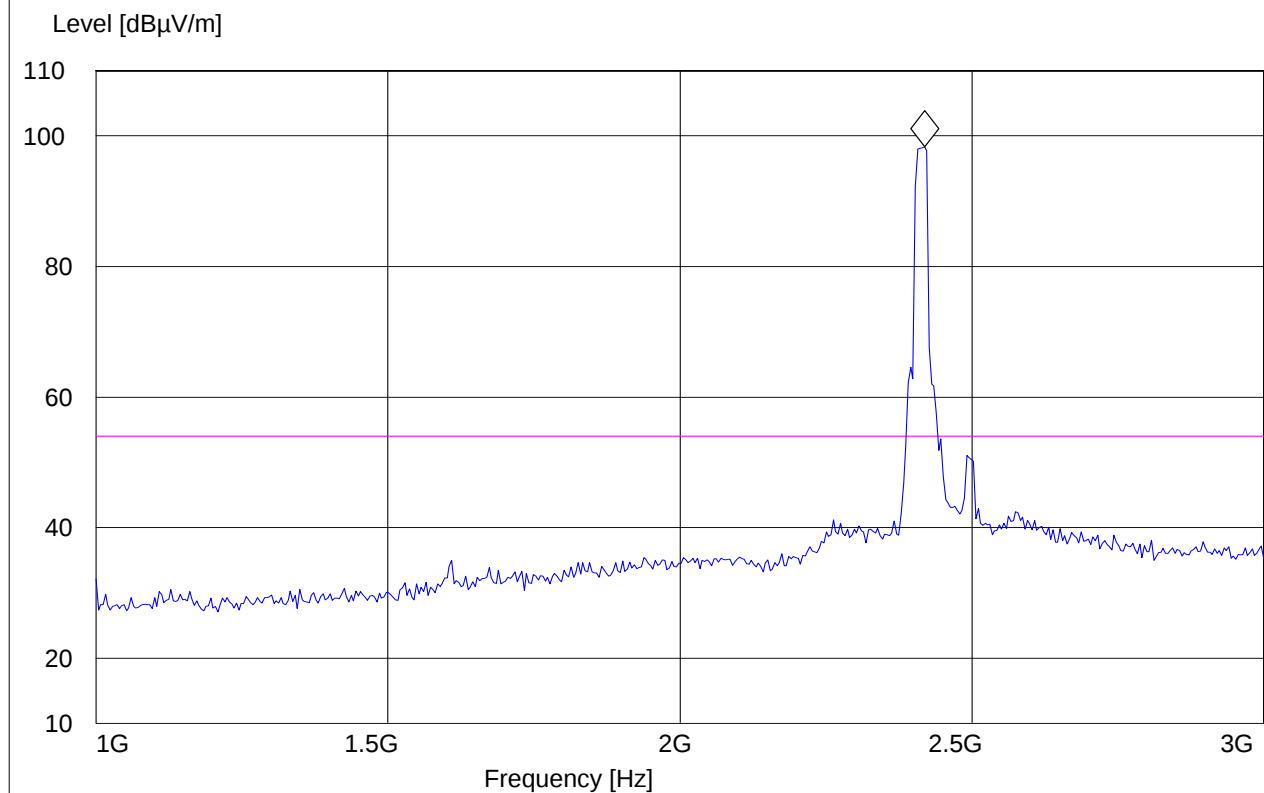
1-3GHz (2412MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.418837675 GHz 98.32 dB μ V/m



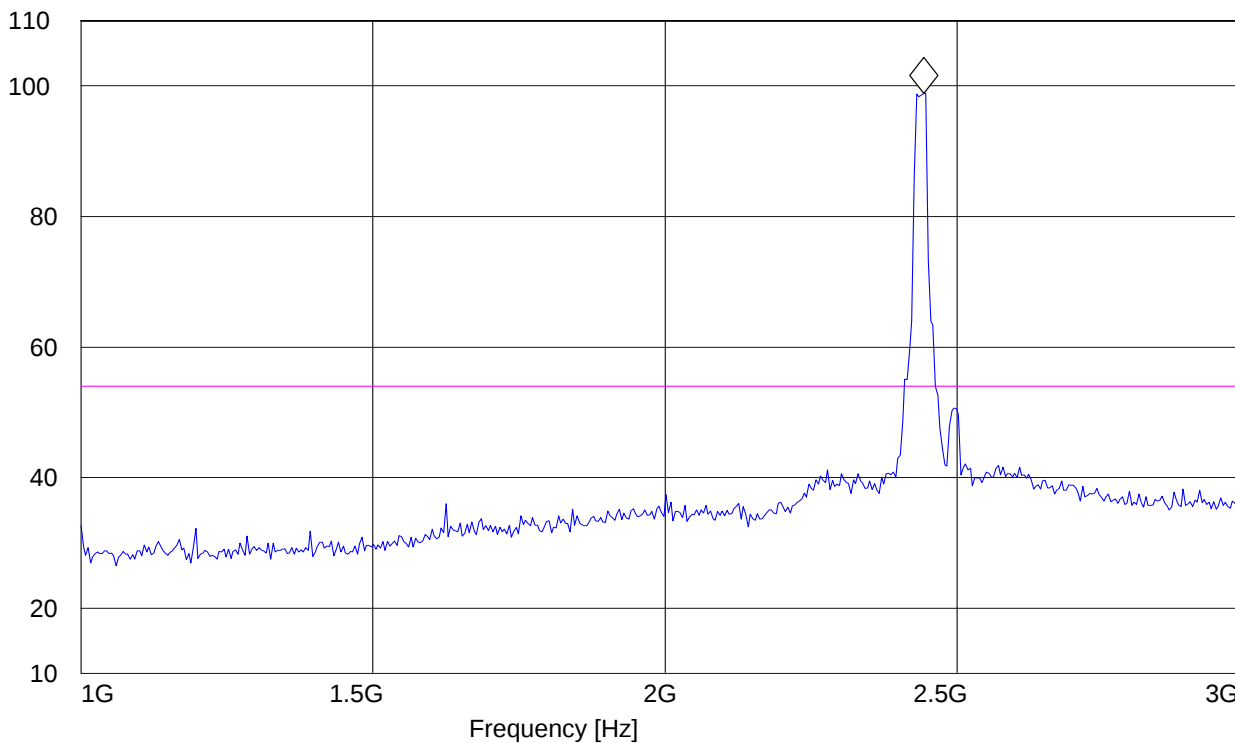
1-3GHz (2437MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.442885772 GHz 98.88 dB μ V/m

Level [dB μ V/m]

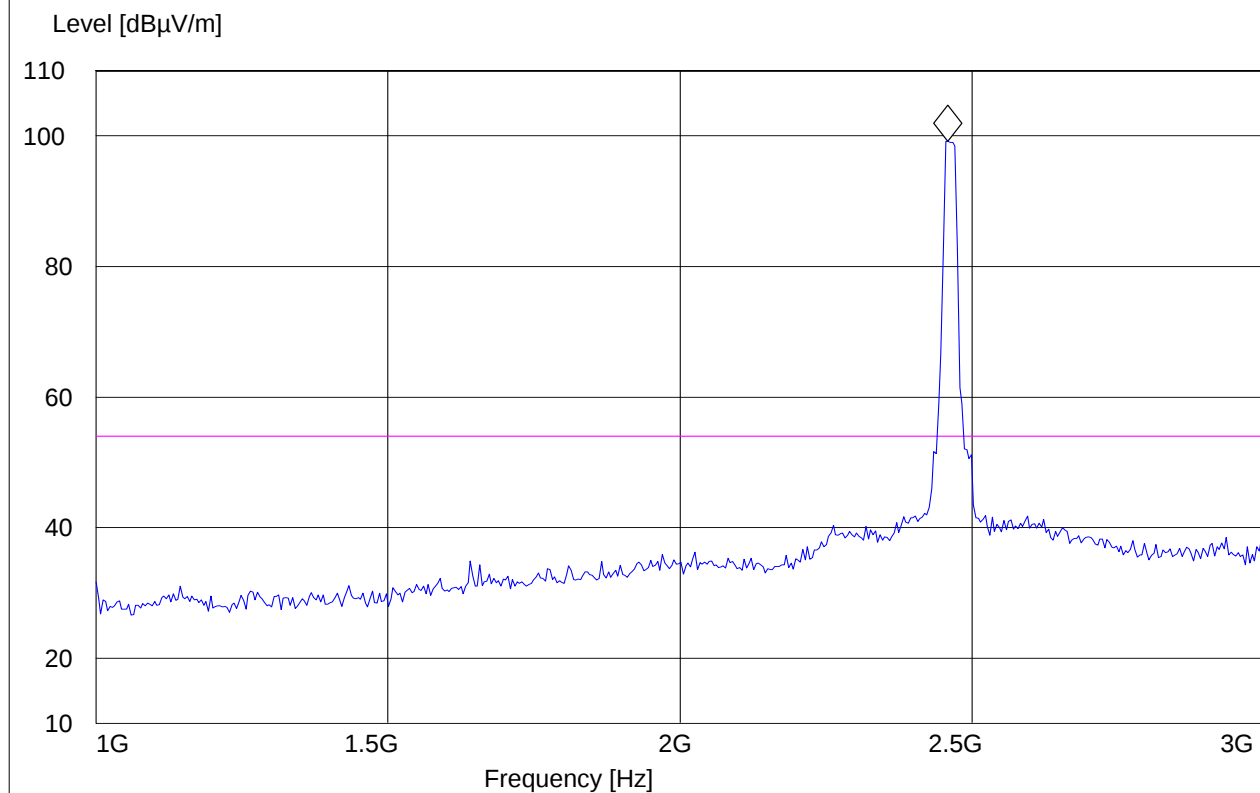
1-3GHz (2462MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.458917836 GHz 99.17 dB μ V/m



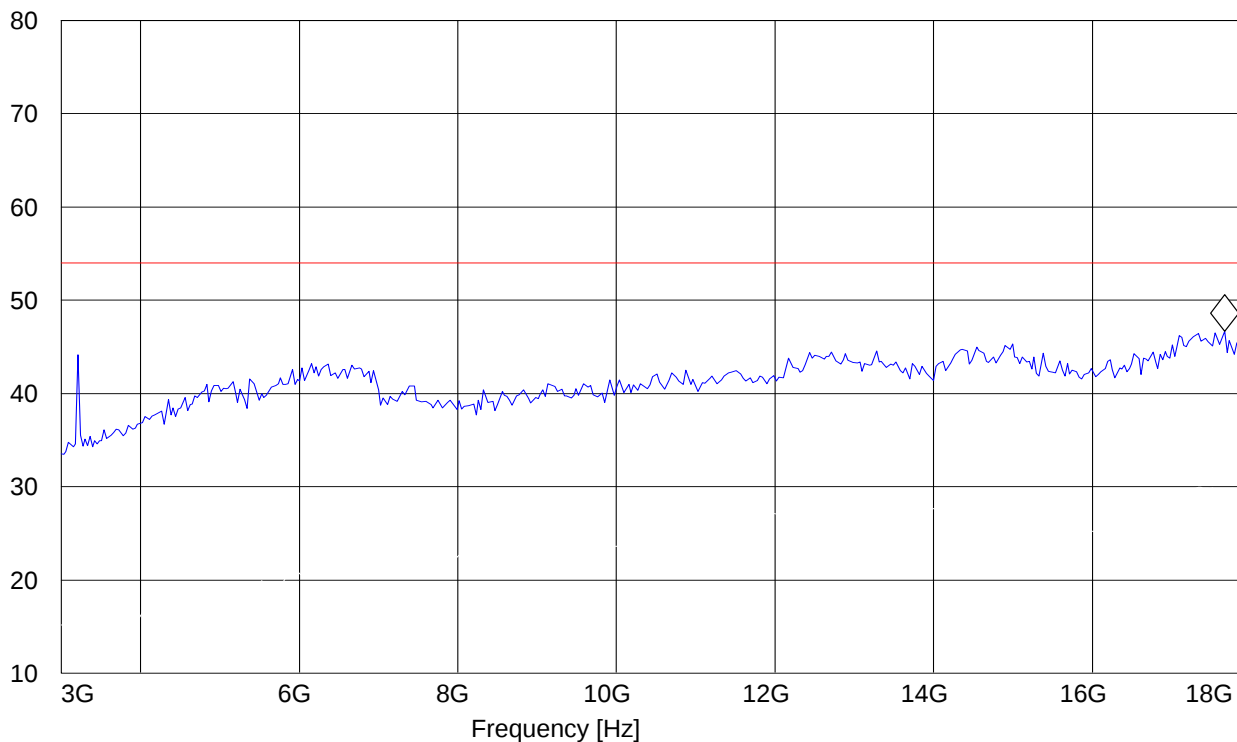
3-18GHz (2412MHz)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments: 2.4 GHz notch filter

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 17.669338677 GHz 46.67 dB μ V/m

Level [dB μ V/m]

3-18GHz (2437MHz)**Note: Peak Reading vs. Average limit**

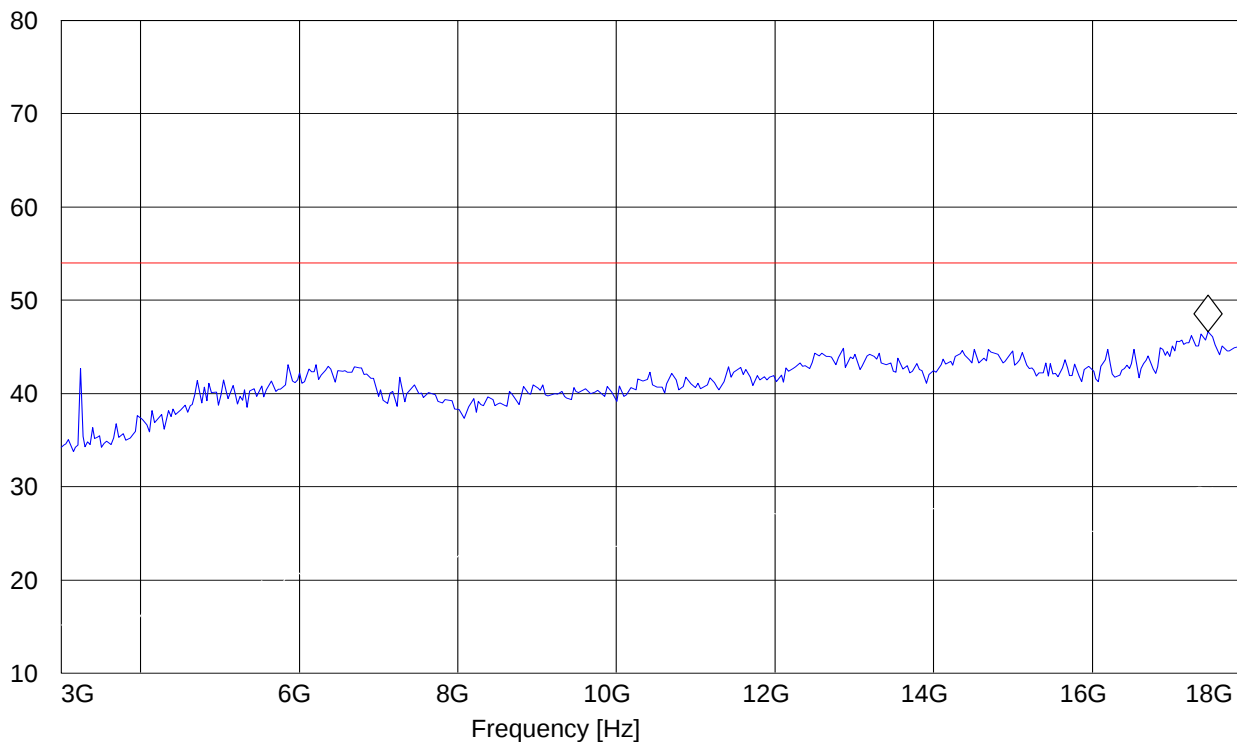
EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments: 2.4 GHz notch filter

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 17.458917836 GHz 46.63 dBμV/m

Level [dBμV/m]



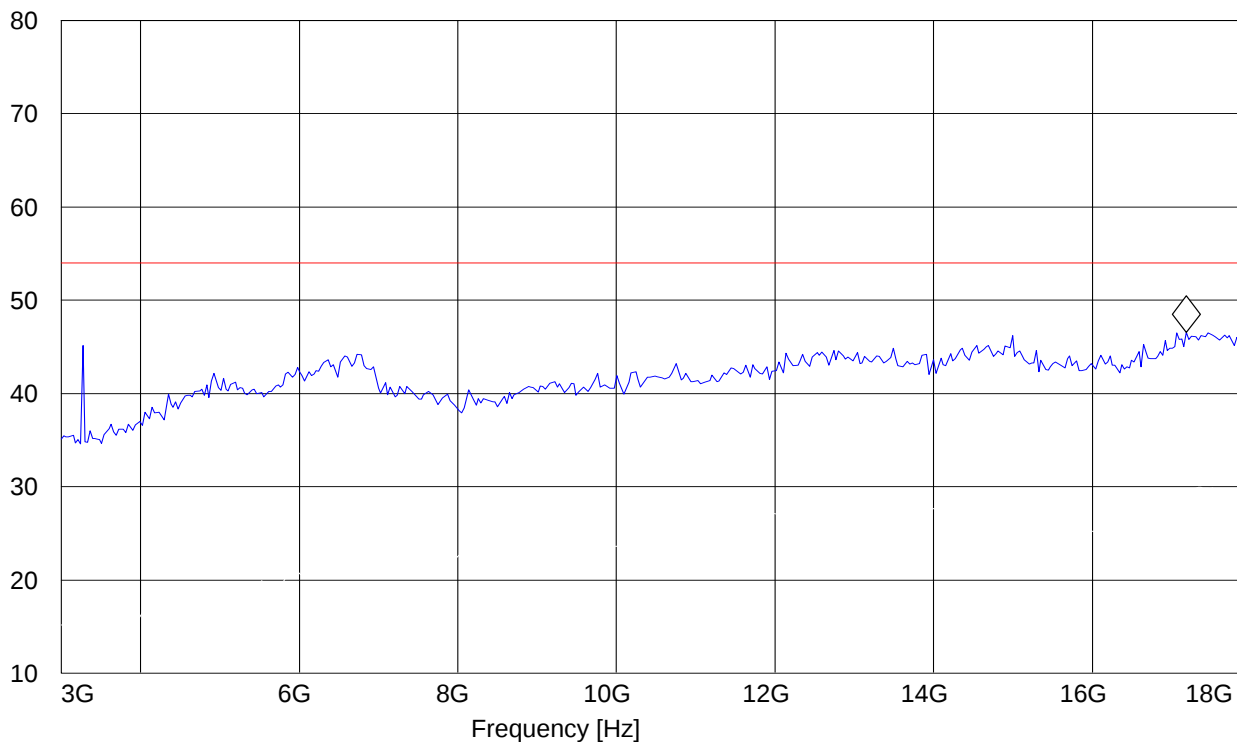
3-18GHz (2462MHz)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments: 2.4 GHz notch filter

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 17.188376754 GHz 46.56 dB μ V/m

Level [dB μ V/m]

18-25GHz

Note: This plot is valid for low, mid, high channels (worst-case plot).

Note: Peak Reading vs. Average limit

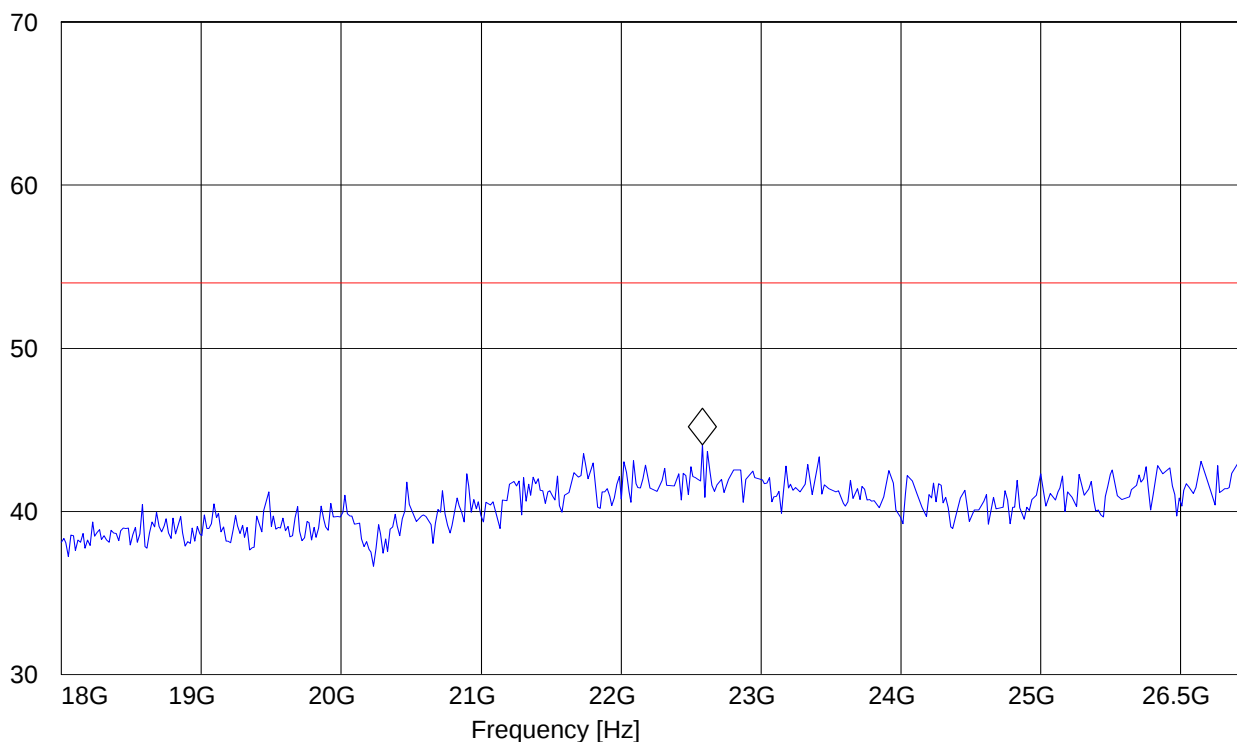
EUT: Laptop
Customer:: Sony
Test Mode: 802.11g CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 22.582164329 GHz 44.09 dBμV/m

Level [dBμV/m]



5.3.3 RESULTS Sub-band 1 802.11n HT20 MODE**30MHz – 1GHz, Antenna: Vertical**

Note: This plot is valid for low, mid, high channels (worst-case plot).

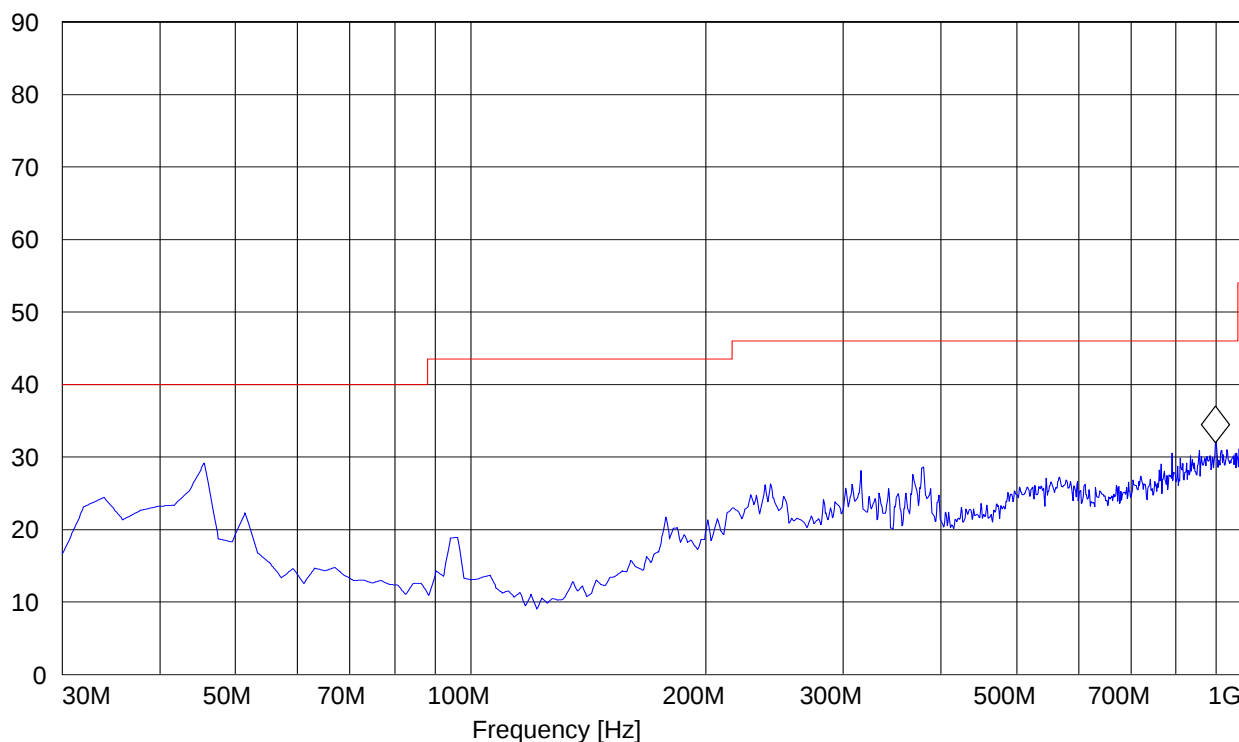
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 6
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert

Marker: 898.917836 MHz 31.98 dB μ V/m

Level [dB μ V/m]



30MHz – 1GHz, Antenna: Horizontal

Note: This plot is valid for low, mid, high channels (worst-case plot).

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

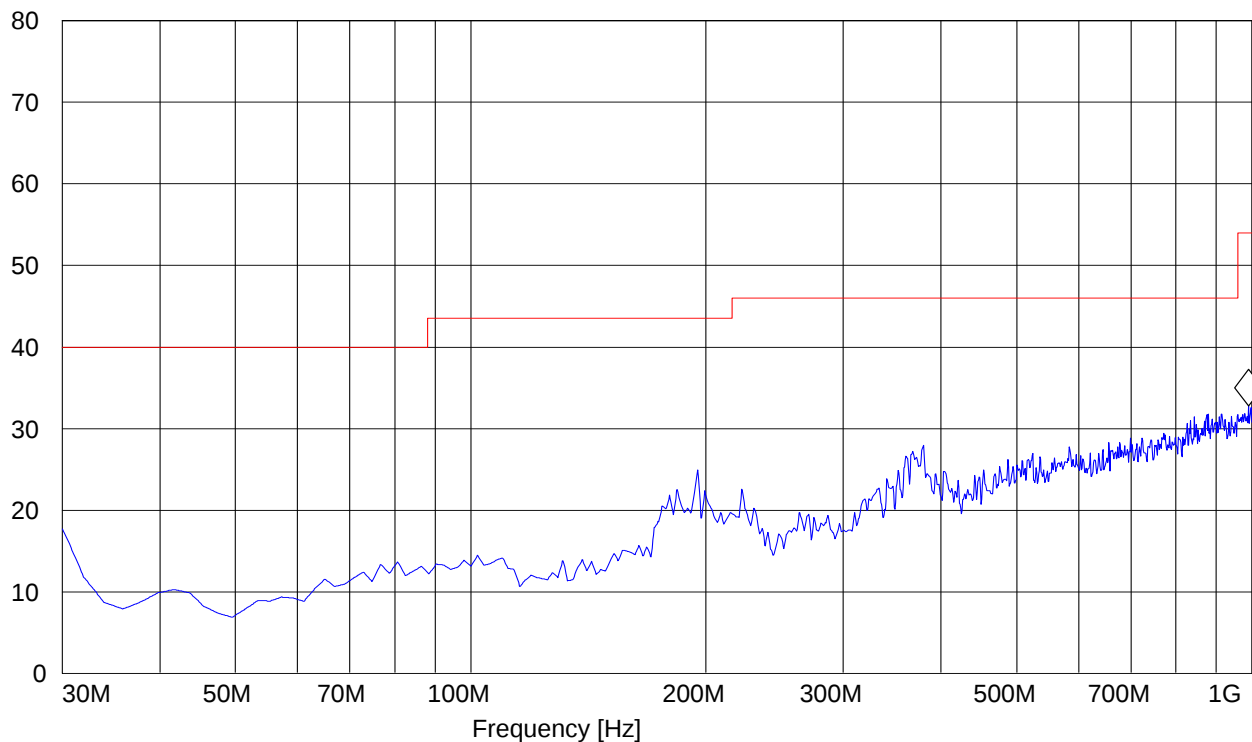
SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz

Marker: 990.280561 MHz

32.8 dBμV/m

Level [dBμV/m]



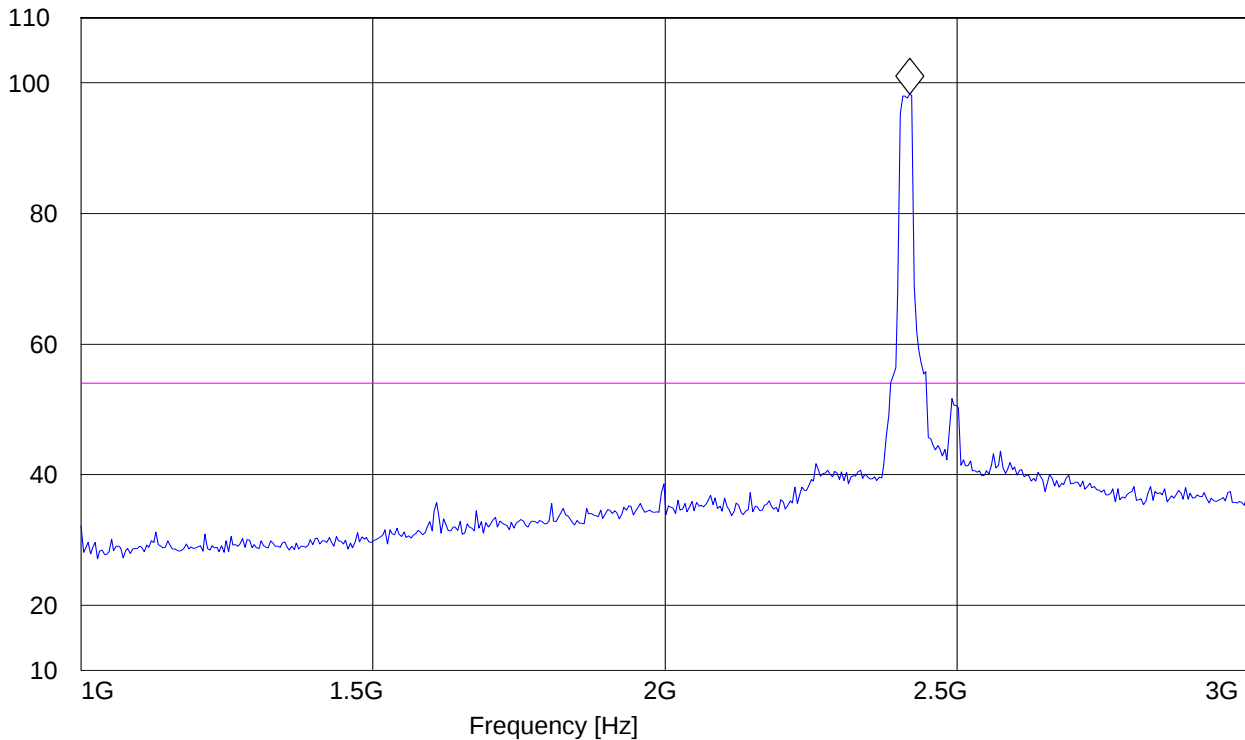
1-3GHz (2412MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.418837675 GHz 98.26 dB μ V/m

Level [dB μ V/m]

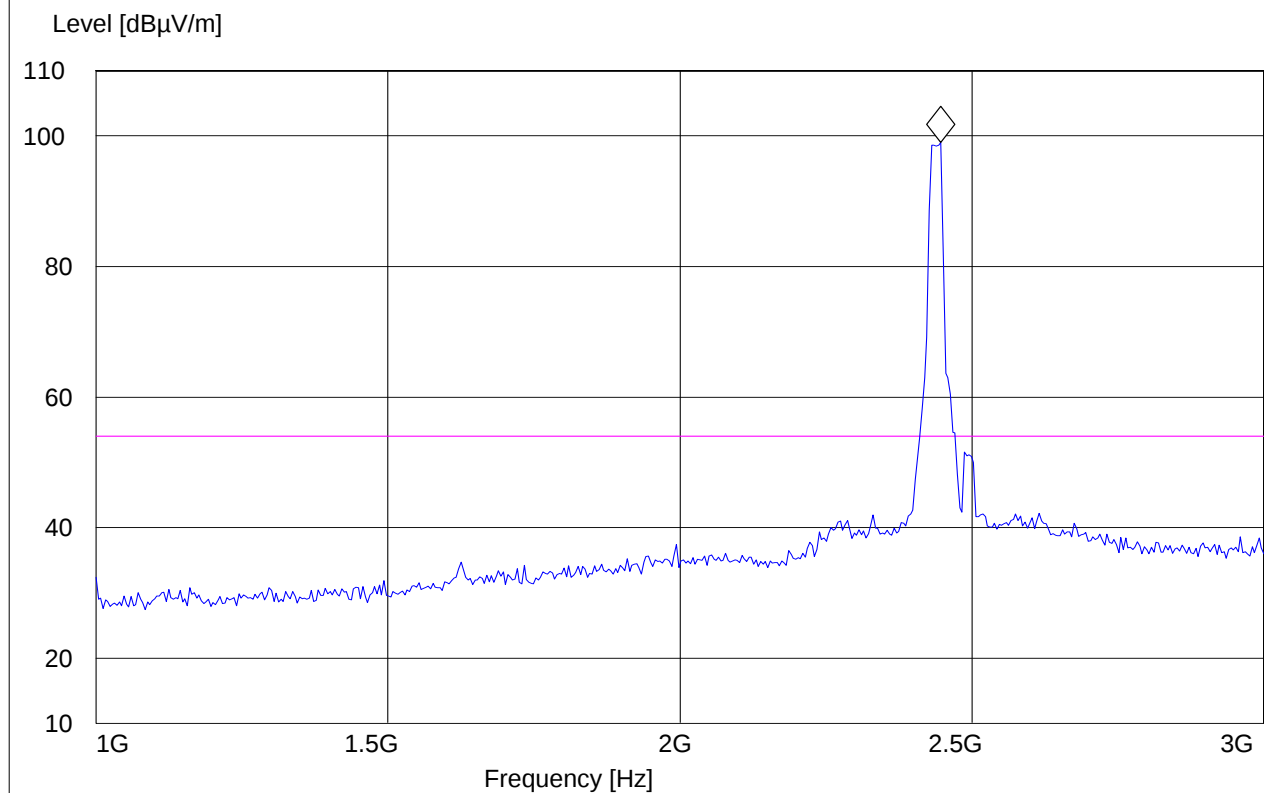
1-3GHz (2437MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.446893788 GHz 99.02 dB μ V/m



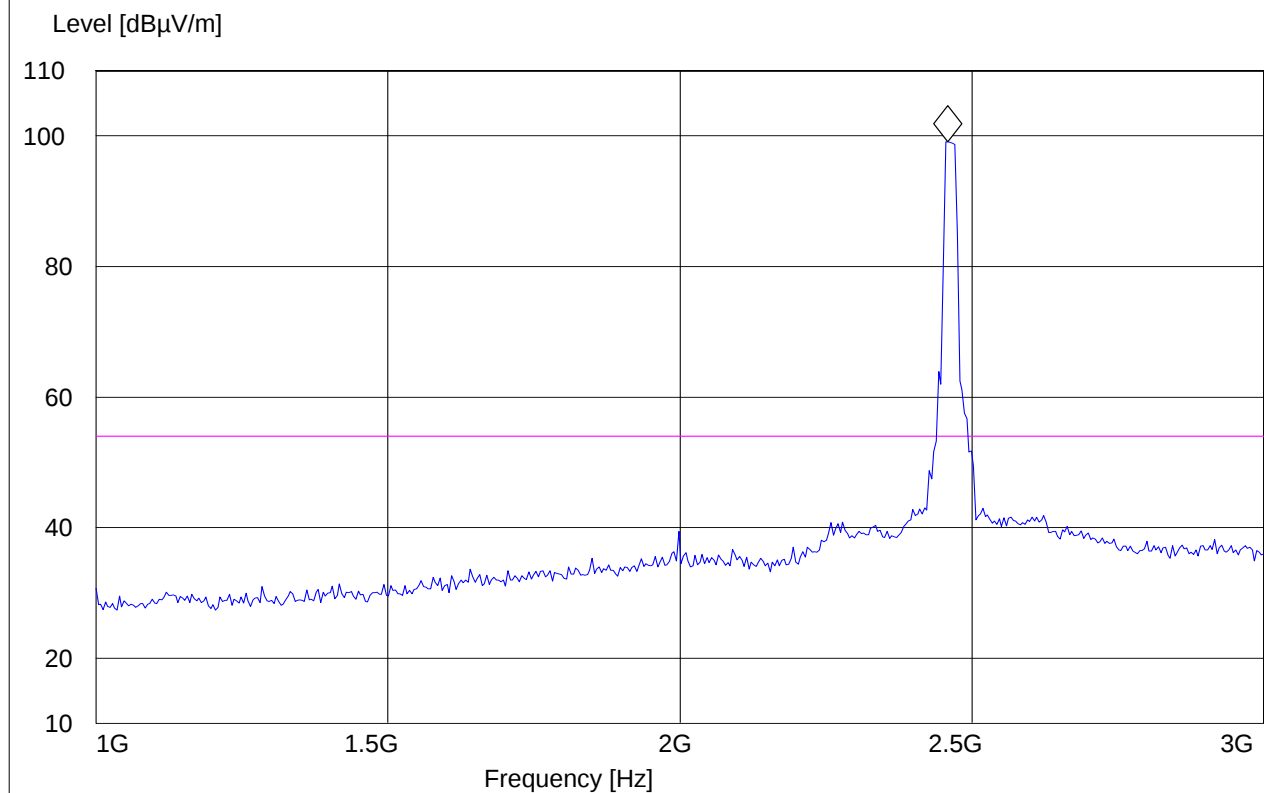
1-3GHz (2462MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.458917836 GHz 99.13 dB μ V/m



3-18GHz (2412MHz)**Note: Peak Reading vs. Average limit**

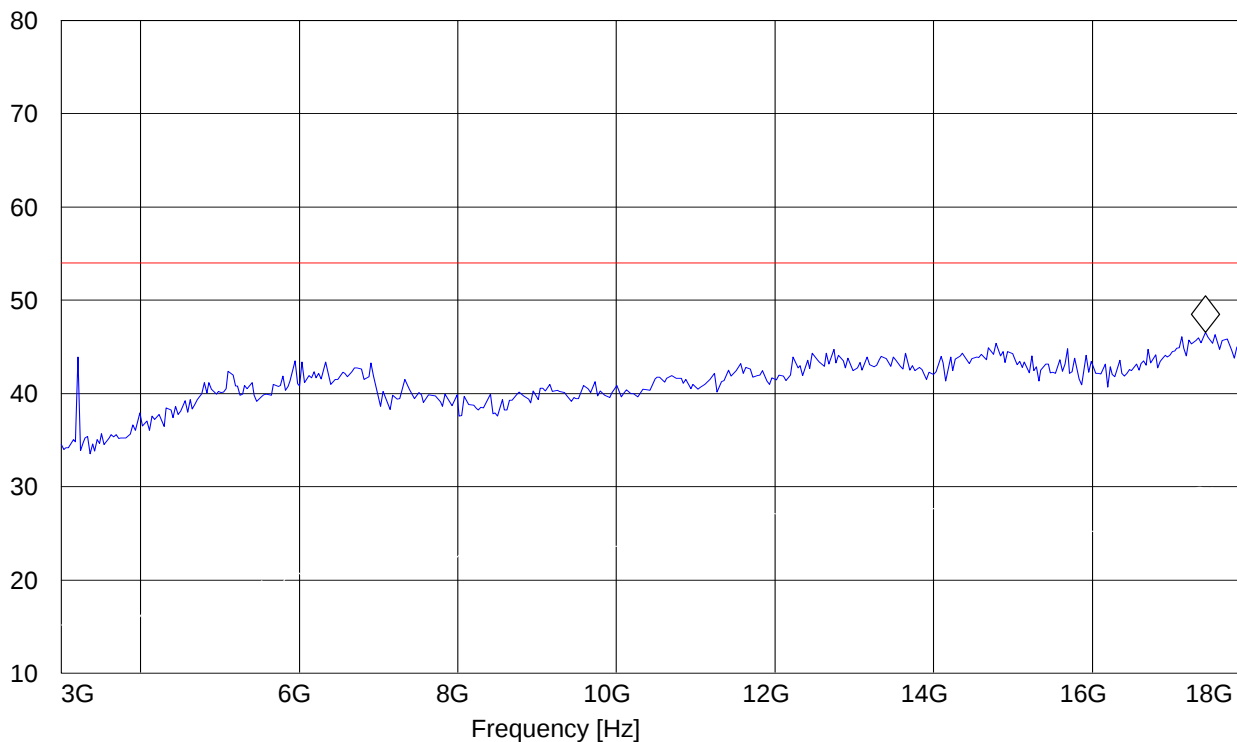
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 17.428857715 GHz 46.57 dBμV/m

Level [dBμV/m]



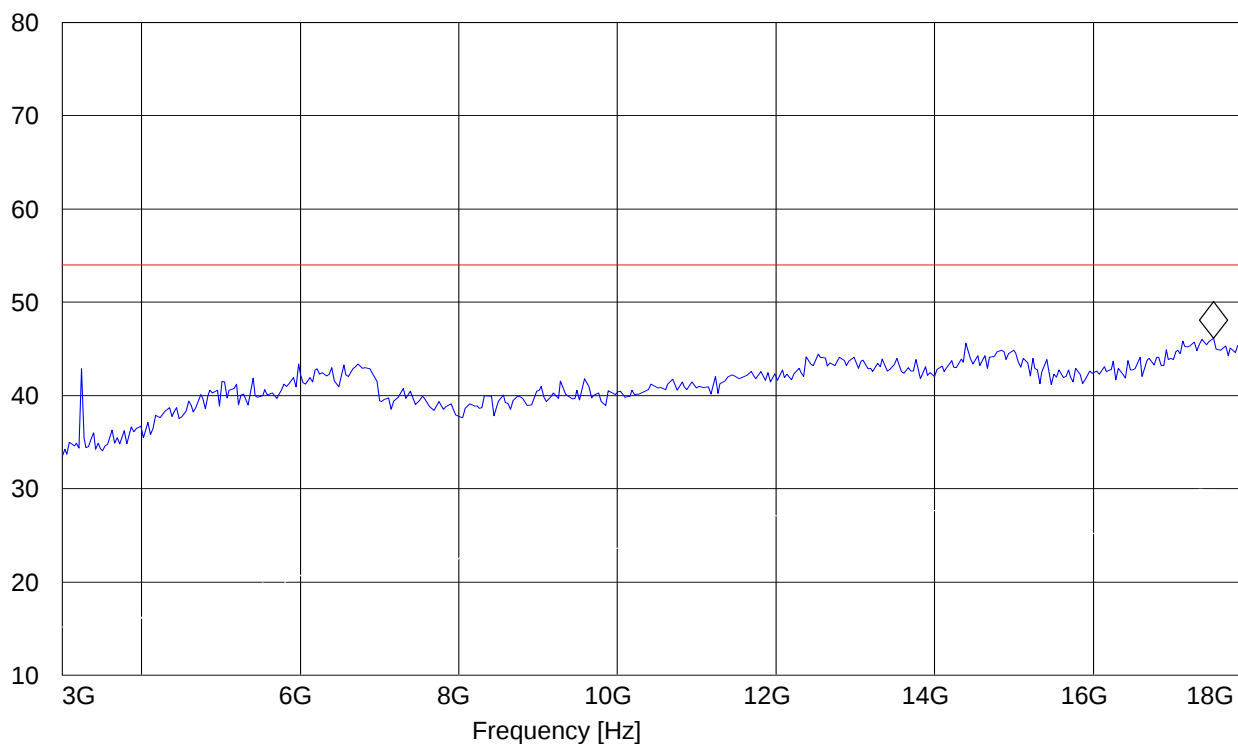
1-18GHz (2437MHz)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 17.519038076 GHz 46.13 dB μ V/m

Level [dB μ V/m]

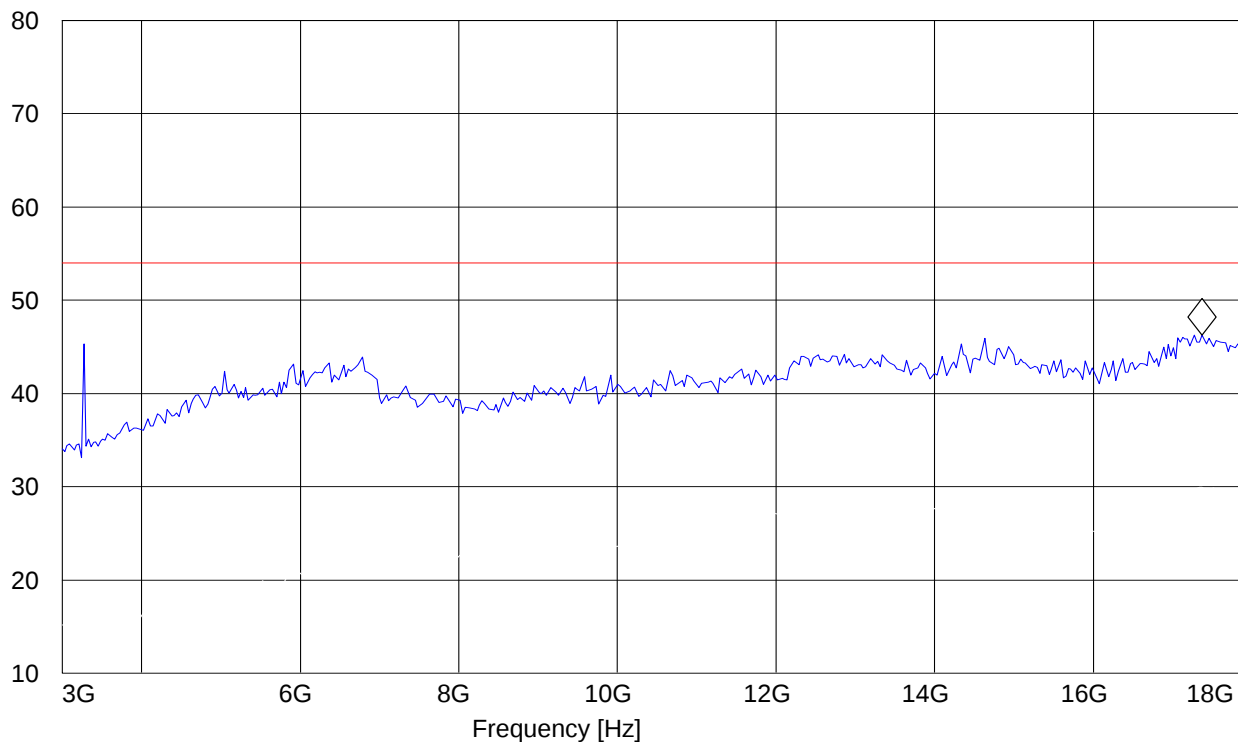
3-18GHz (2462MHz)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 11
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 17.368737475 GHz 46.26 dB μ V/m

Level [dB μ V/m]

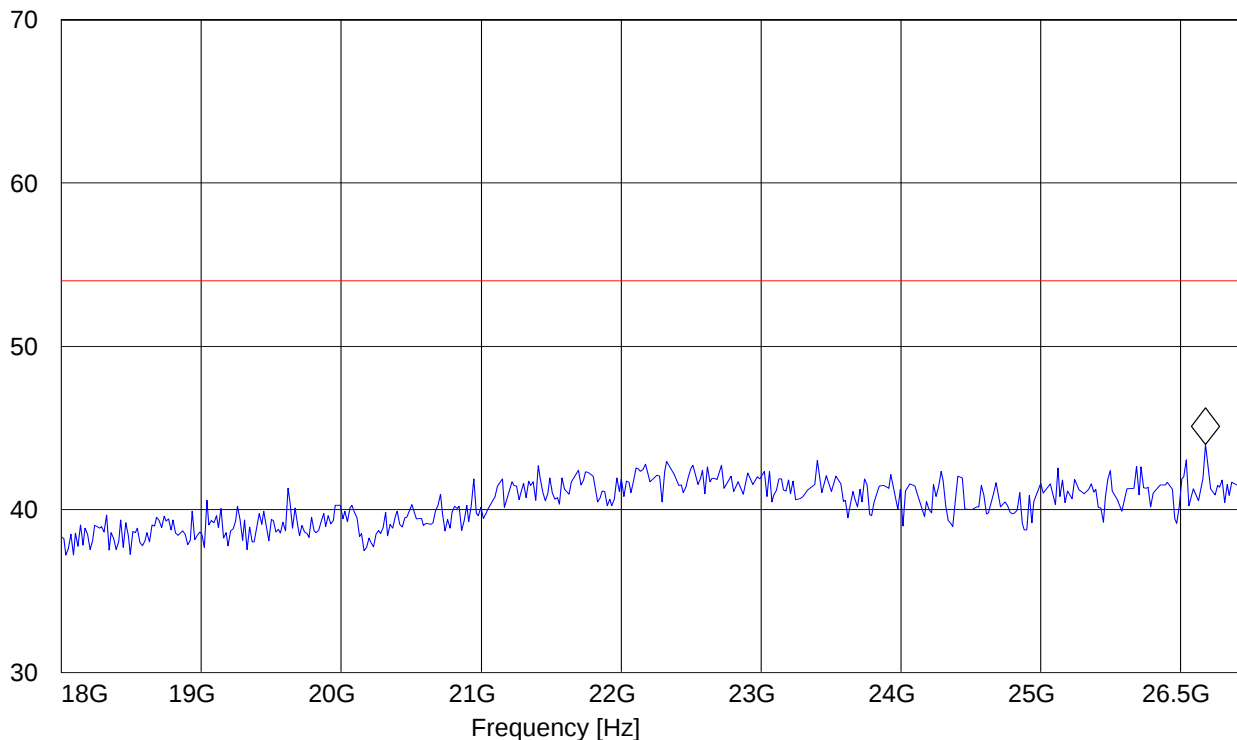
18-25GHz**Note:** This plot is valid for low, mid, high channels (worst-case plot).**Note:** Peak Reading vs. Average limit

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 2437 MHz
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 26.176352705 GHz 43.97 dB μ V/m

Level [dB μ V/m]

5.3.4 RESULTS Sub-band 1 802.11n HT40 MODE

30MHz – 1GHz, Antenna: Vertical

Note: This plot is valid for low, mid, high channels (worst-case plot).

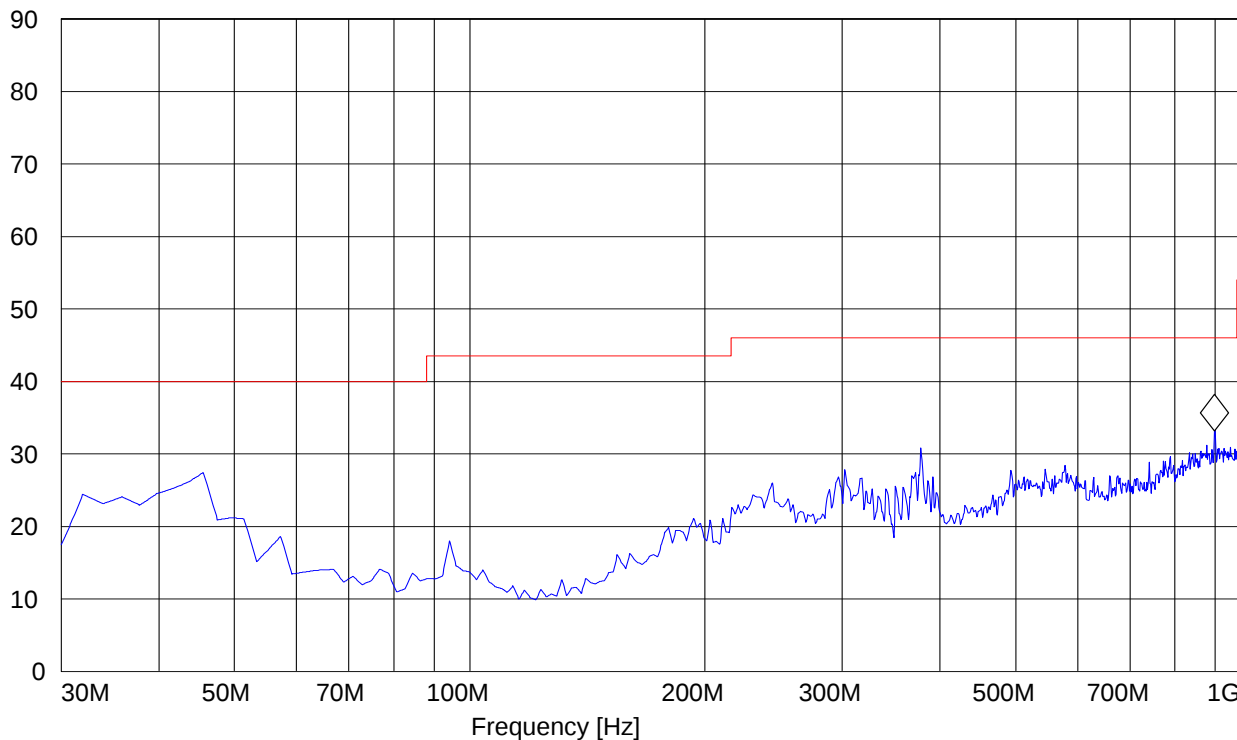
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 6
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert

Marker: 898.917836 MHz 33.18 dB μ V/m

Level [dB μ V/m]



30MHz – 1GHz, Antenna: Horizontal

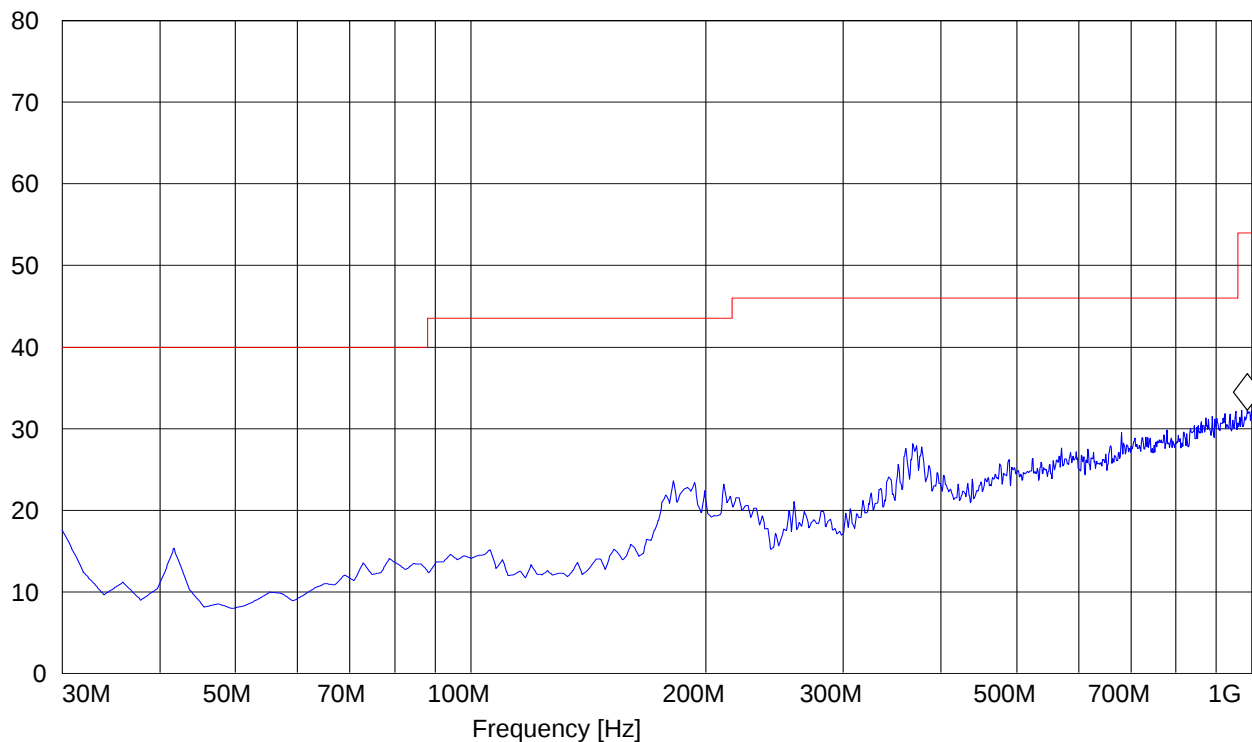
Note: This plot is valid for low, mid, high channels (worst-case plot).

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz

Marker: 986.392786 MHz

32.29 dB μ V/mLevel [dB μ V/m]

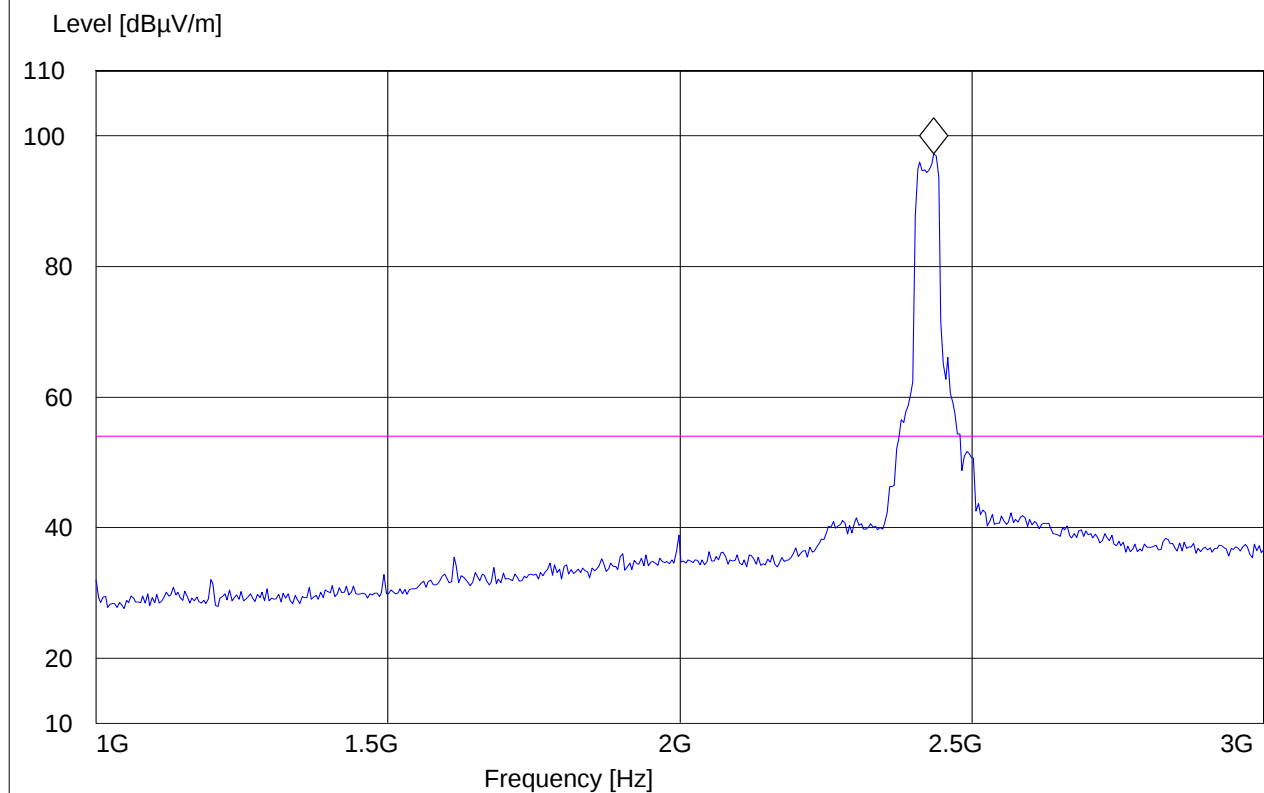
1-3GHz (2422MHz)**Note:** The peak above the limit line is the carrier freq.**Note:** Peak Reading vs. Average limit

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.434869739 GHz 97.29 dB μ V/m



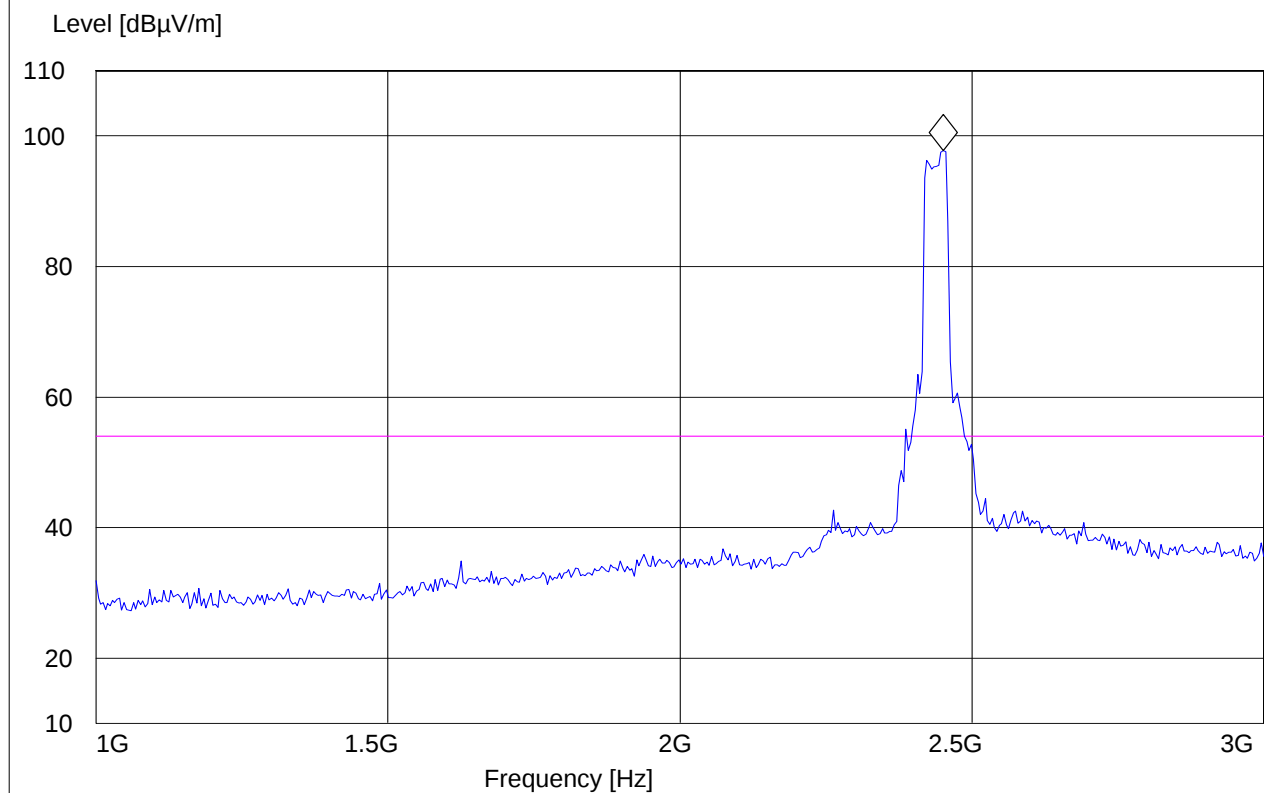
1-3GHz (2437MHz)**Note:** The peak above the limit line is the carrier freq.**Note:** Peak Reading vs. Average limit

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.450901804 GHz 97.78 dB μ V/m



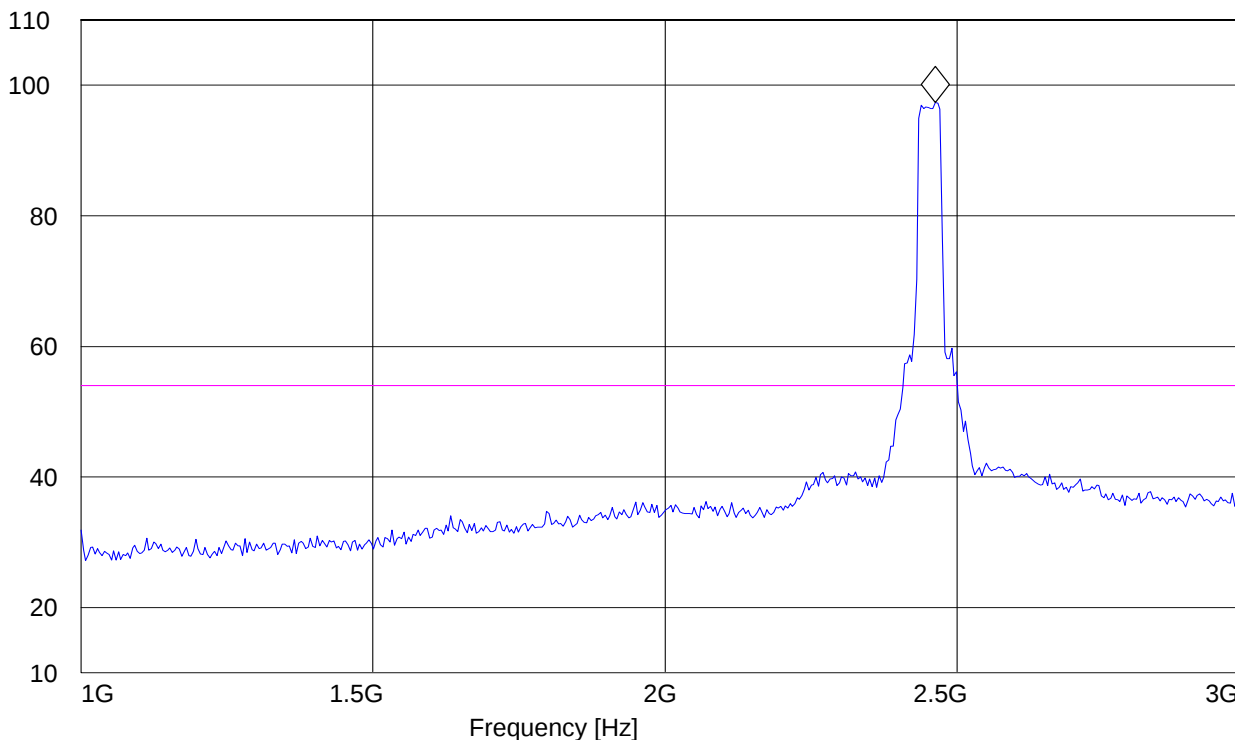
1-3GHz (2452MHz)**Note:** The peak above the limit line is the carrier freq.**Note:** Peak Reading vs. Average limit

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 10
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 2.462925852 GHz 97.36 dB μ V/m

Level [dB μ V/m]

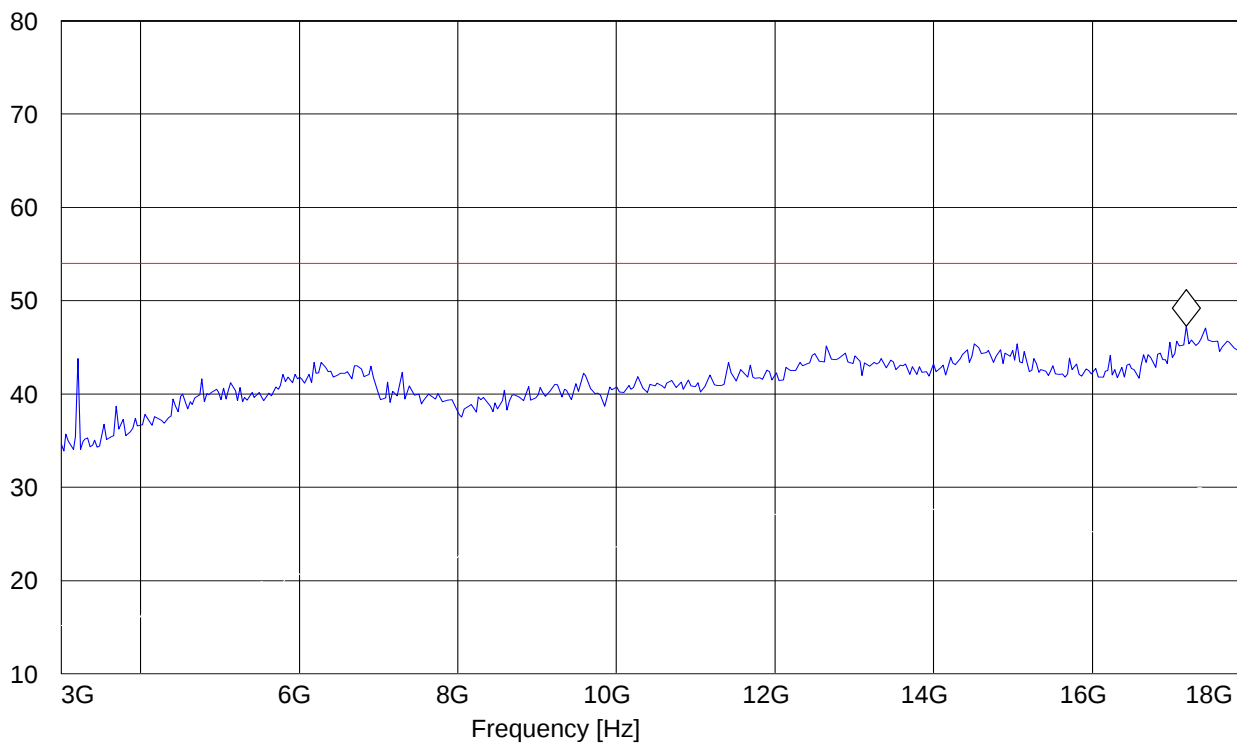
3-18GHz (2422MHz)**Note:** Peak Reading vs. Average limit

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 1
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 17.188376754 GHz 47.23 dB μ V/m

Level [dB μ V/m]

3-18GHz (2437MHz)**Note:** Peak Reading vs. Average limit

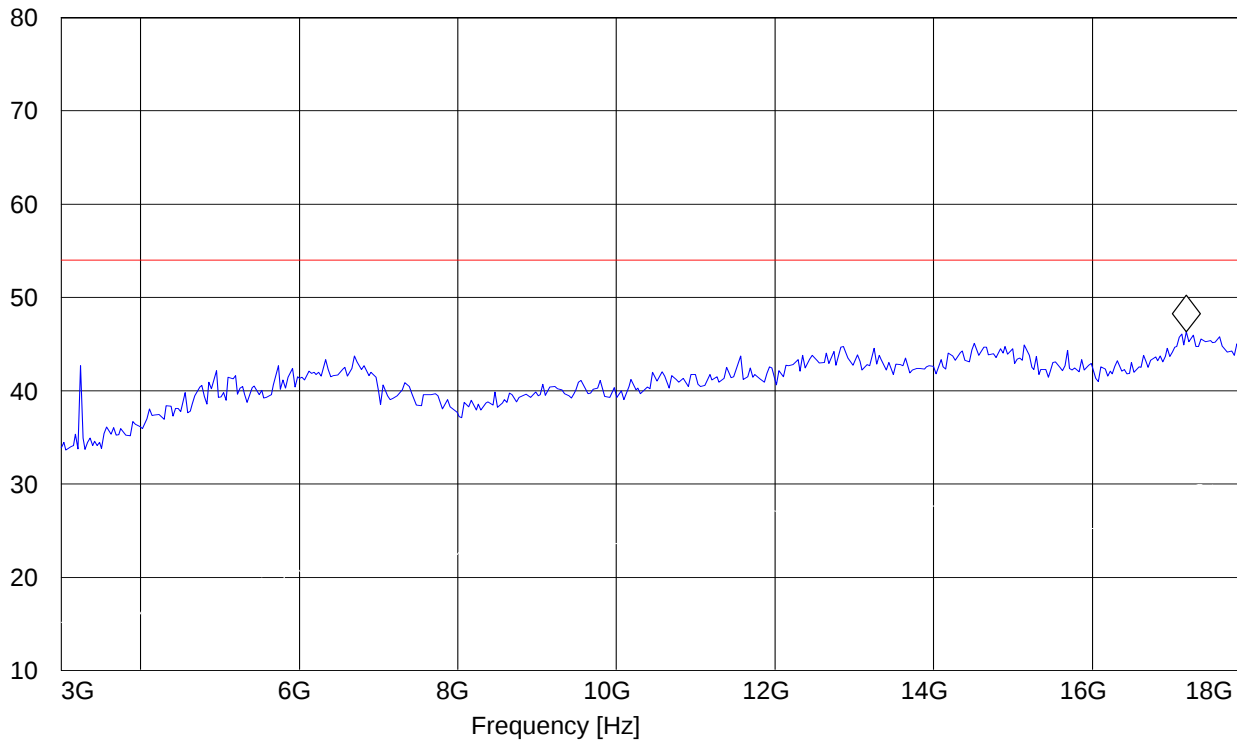
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 6
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 17.188376754 GHz 46.34 dBμV/m

Level [dBμV/m]



3-18GHz (2452MHz)**Note:** Peak Reading vs. Average limit

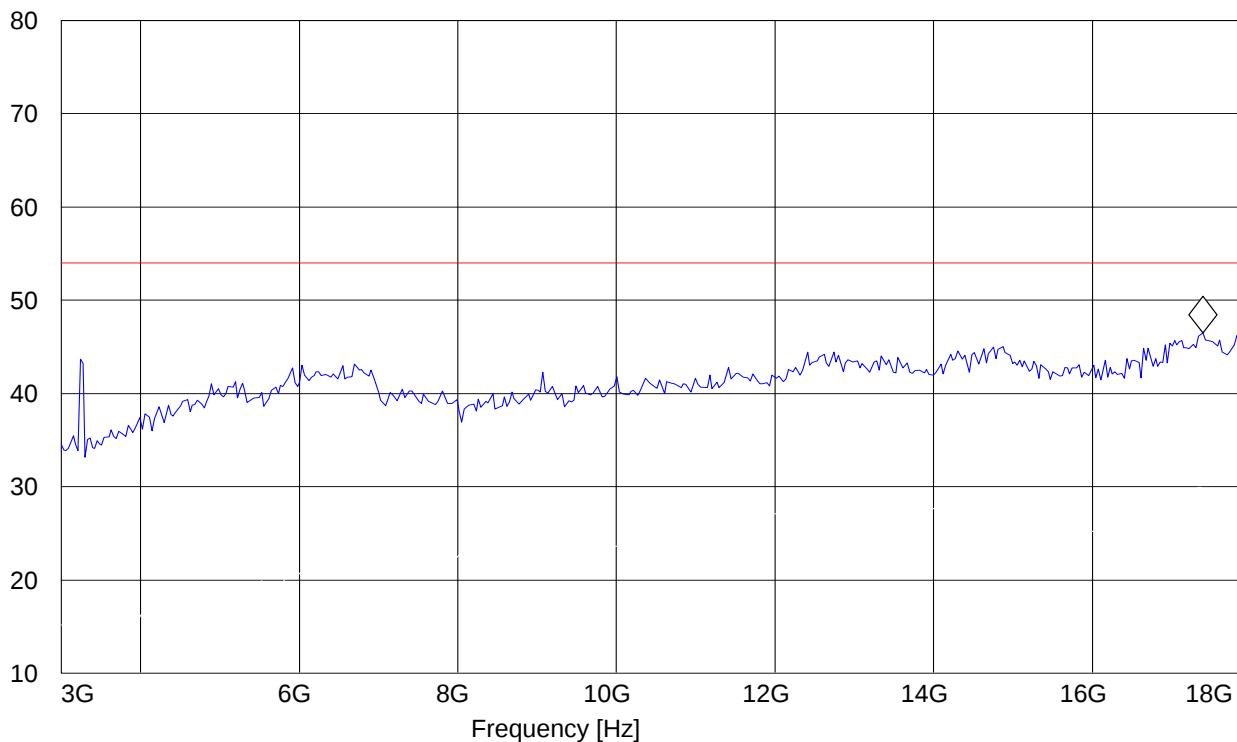
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 10
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

Marker: 17.398797595 GHz 46.5 dBμV/m

Level [dBμV/m]



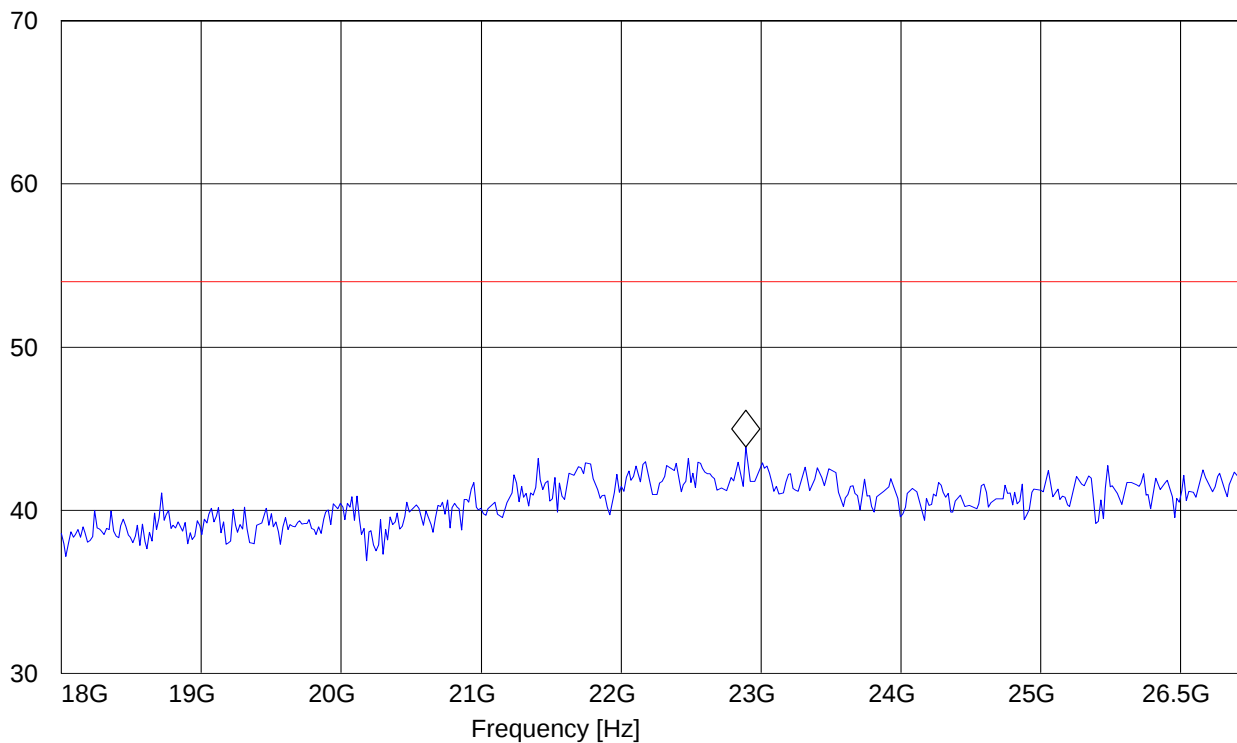
18-26.5GHz**Note:** This plot is valid for low, mid, high channels (worst-case plot)**Note:** Peak Reading vs. Average limit

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 2437 MHz
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 22.888777555 GHz 43.89 dB μ V/m

Level [dB μ V/m]

5.3.5 RESULTS Sub-band 2 802.11a MODE**30MHz – 1GHz, Antenna: Vertical**

Note: This plot is valid for low, mid, high channels (worst-case plot).

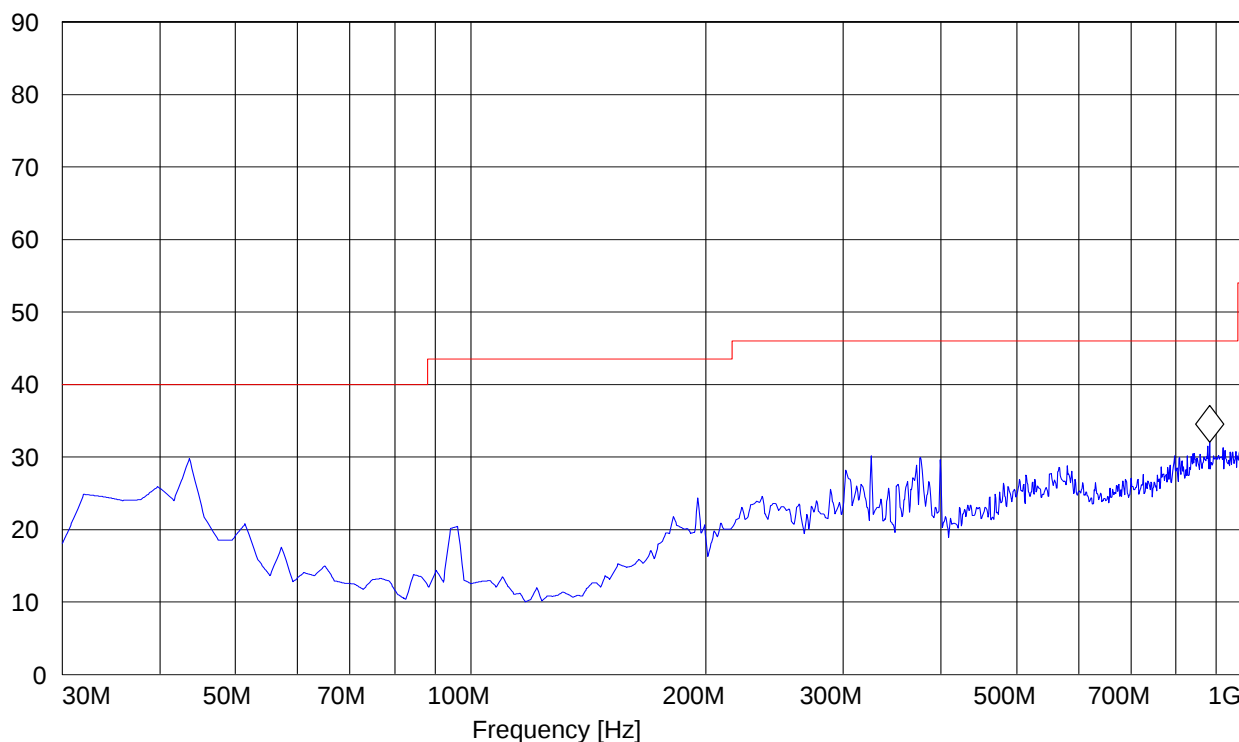
EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH157
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert

Marker: 883.366733 MHz 32.05 dB μ V/m

Level [dB μ V/m]



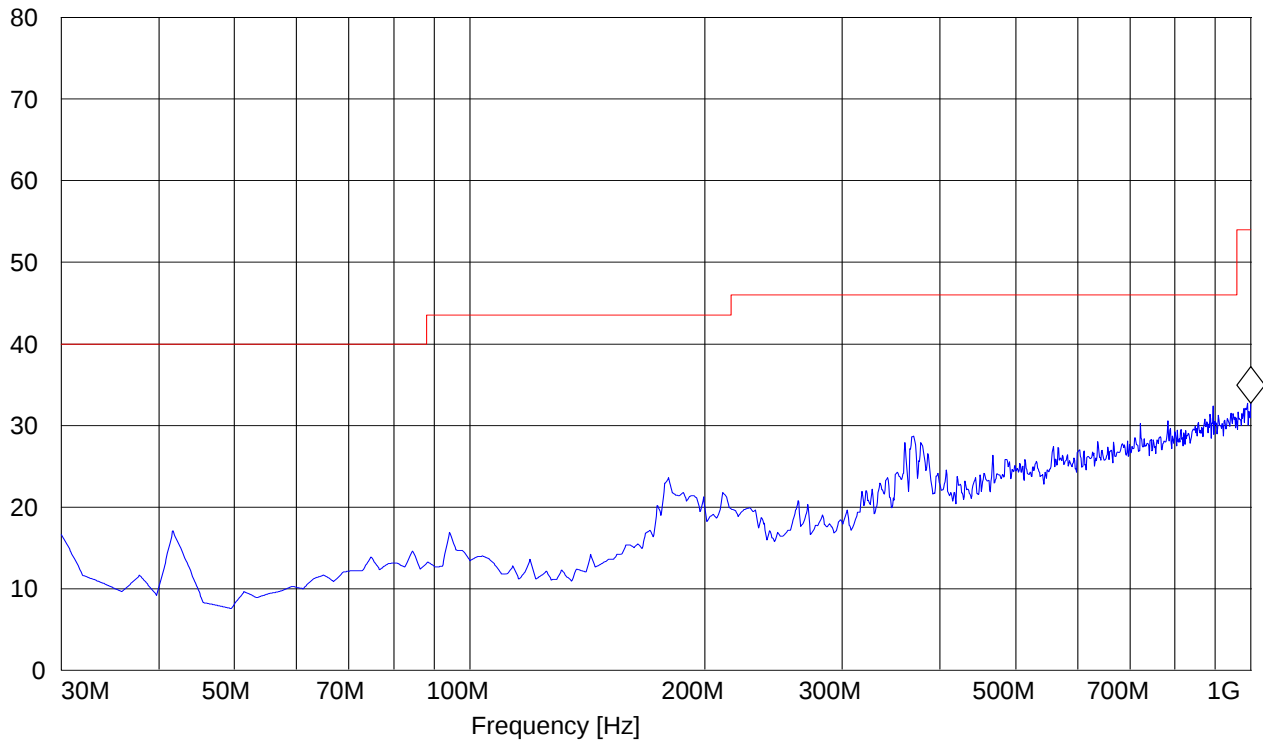
30MHz – 1GHz, Antenna: Horizontal

Note: This plot is valid for low, mid, high channels (worst-case plot).

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz

Marker: 1 GHz 32.73 dB μ V/mLevel [dB μ V/m]

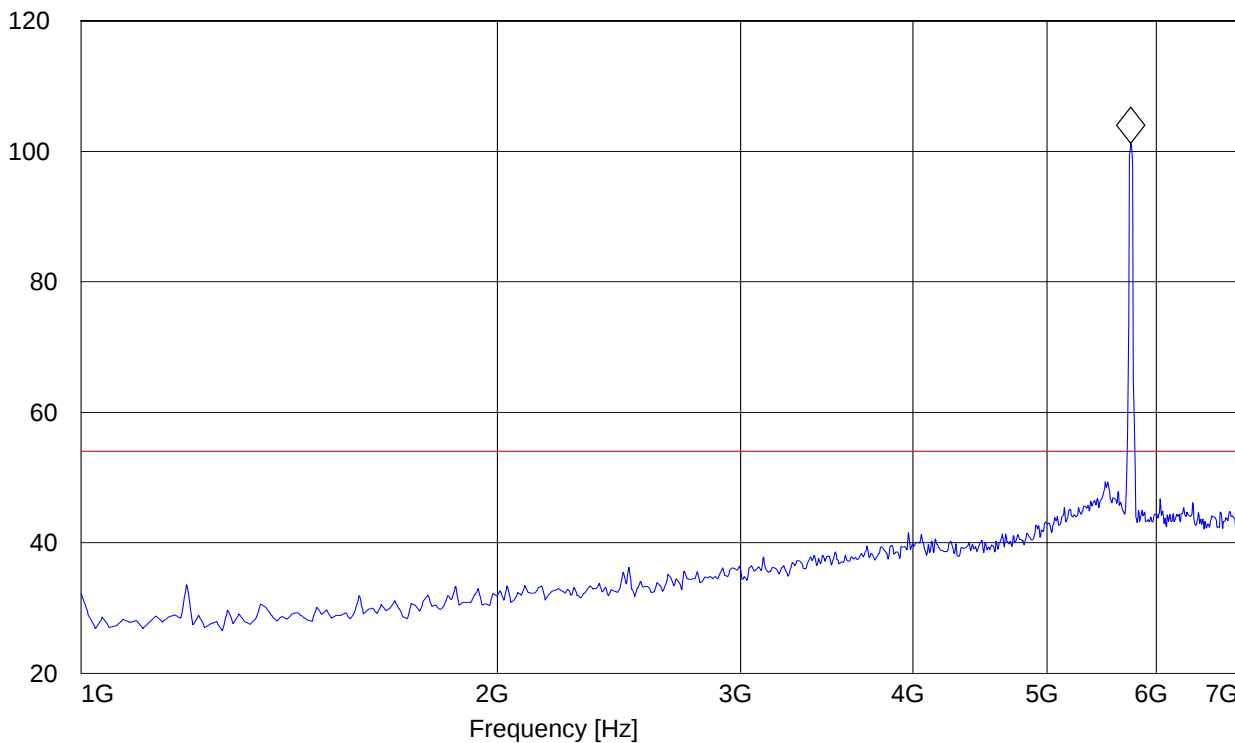
1-7GHz (5745MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 149
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn

Marker: 5.749498998 GHz 101.24 dB μ V/m

Level [dB μ V/m]

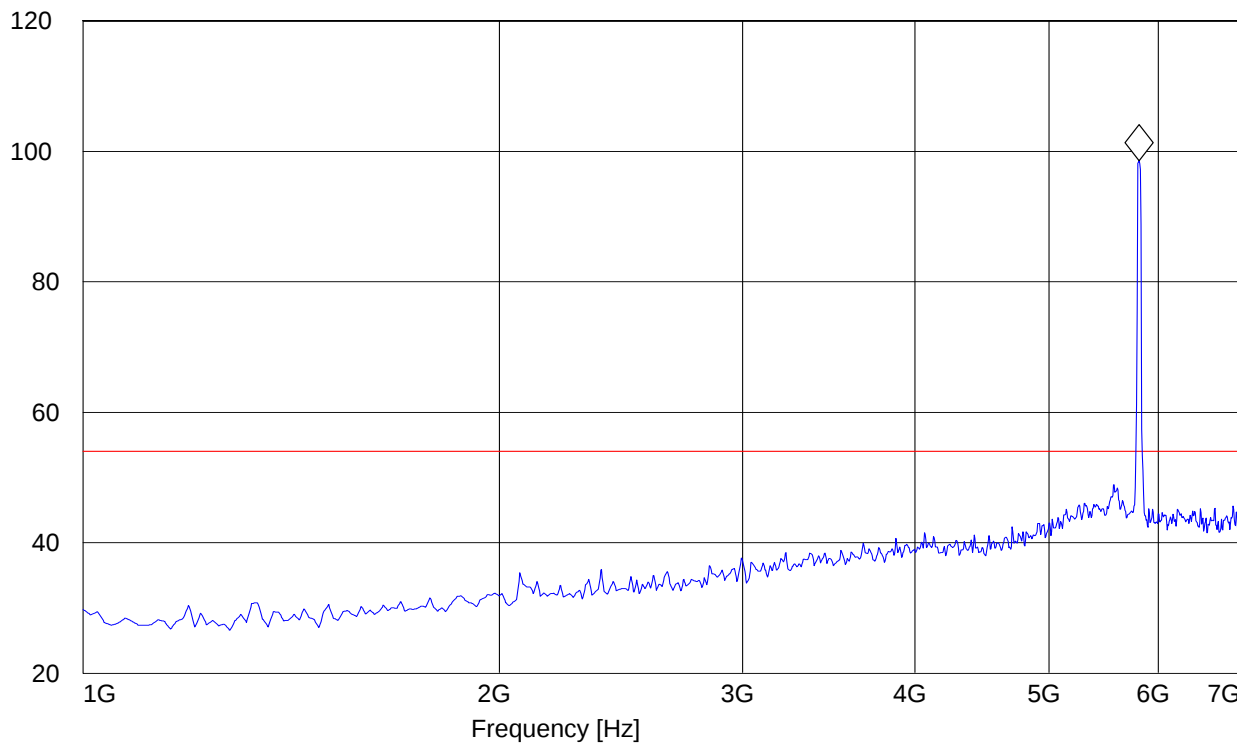
1-7GHz (5785MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn

Marker: 5.809619238 GHz 98.51 dB μ V/m

Level [dB μ V/m]

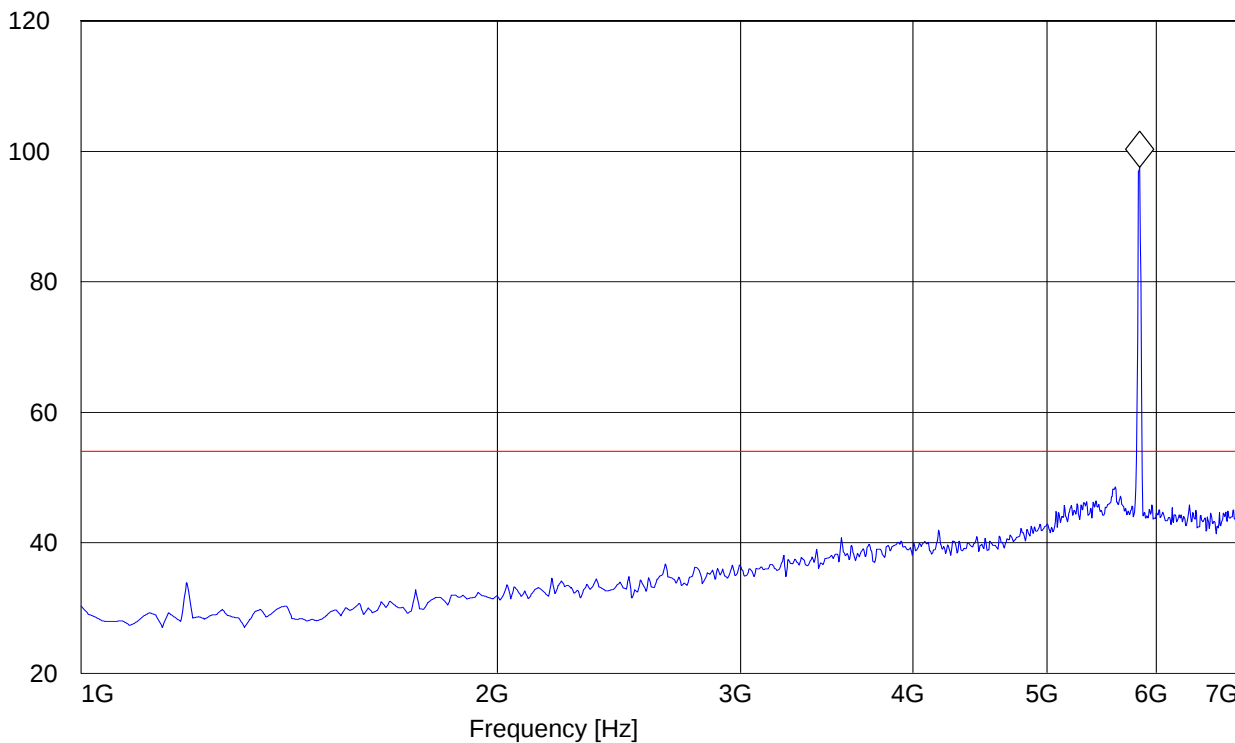
1-7GHz (5825MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 165
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn

Marker: 5.833667335 GHz 97.52 dB μ V/m

Level [dB μ V/m]

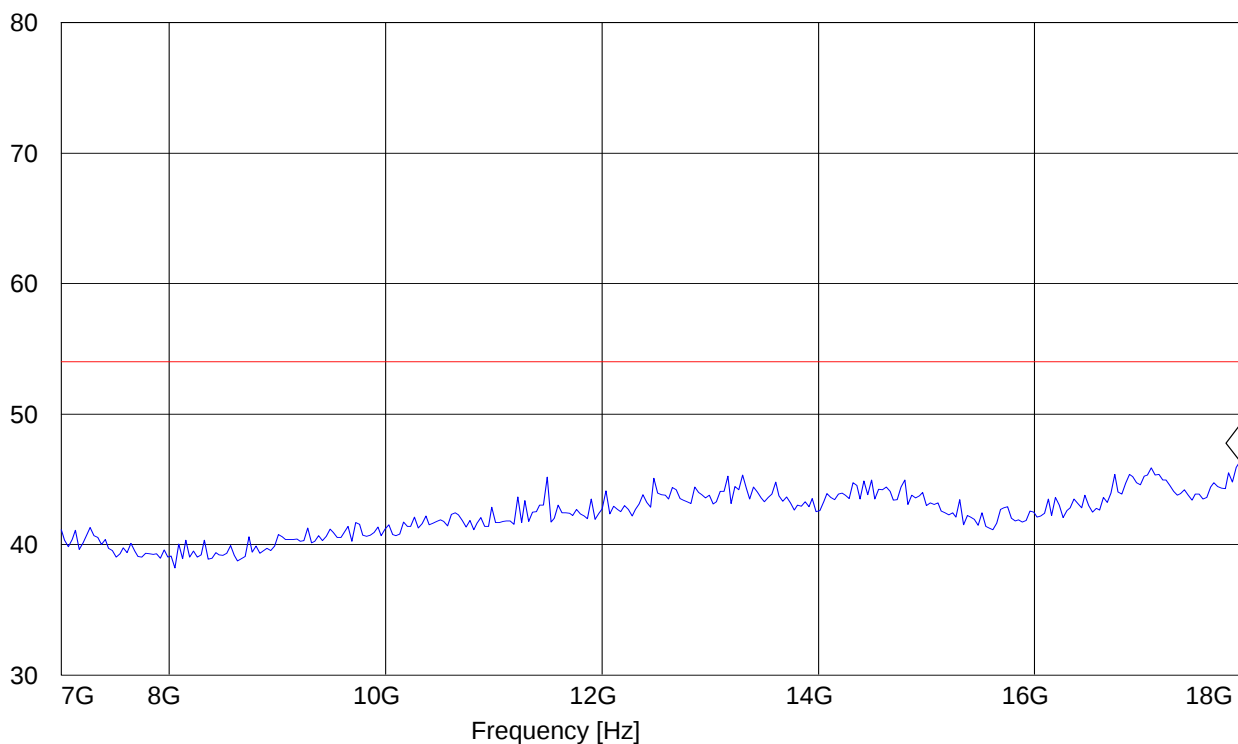
7-18GHz (5745MHz)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 149
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments: 6.2GHz HPF

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz

Marker: 17.897795591 GHz 46.41 dB μ V/m

Level [dB μ V/m]

7-18GHz (5785MHz)**Note: Peak Reading vs. Average limit**

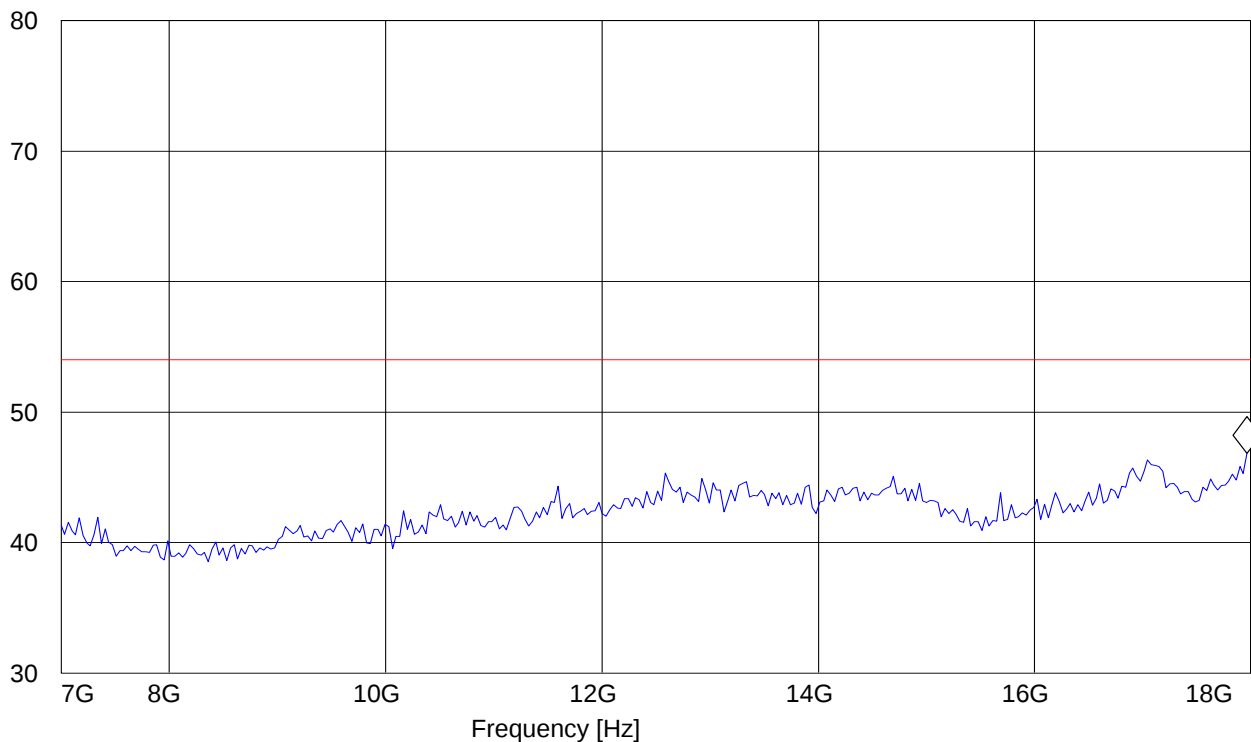
EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments: 6.2GHz HPF

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz

Marker: 17.965931864 GHz 46.84 dBμV/m

Level [dBμV/m]



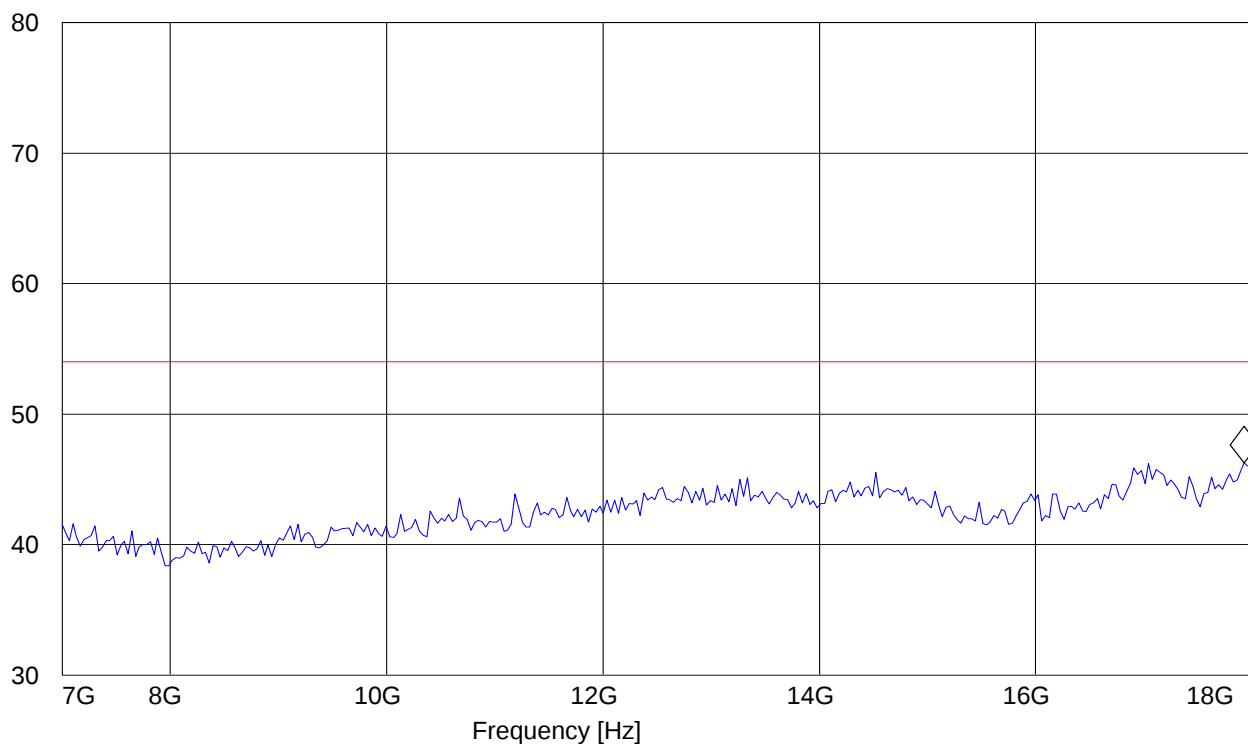
7-18GHz (5825MHz)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 165
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments: 6.2GHz HPF

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz

Marker: 17.931863727 GHz 46.25 dB μ V/m

Level [dB μ V/m]

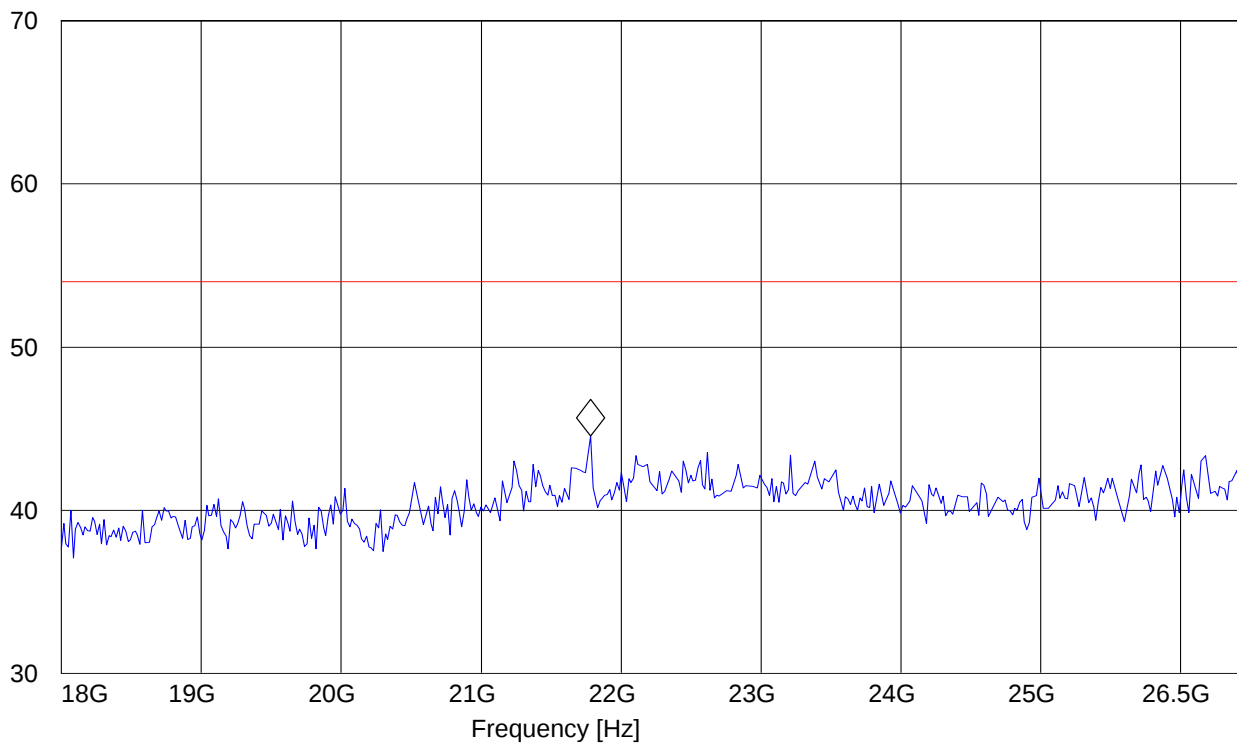
18-26.5GHz (5745MHz)**Note:** Peak Reading vs. Average limit

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 149
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 21.781563126 GHz 44.54 dB μ V/m

Level [dB μ V/m]

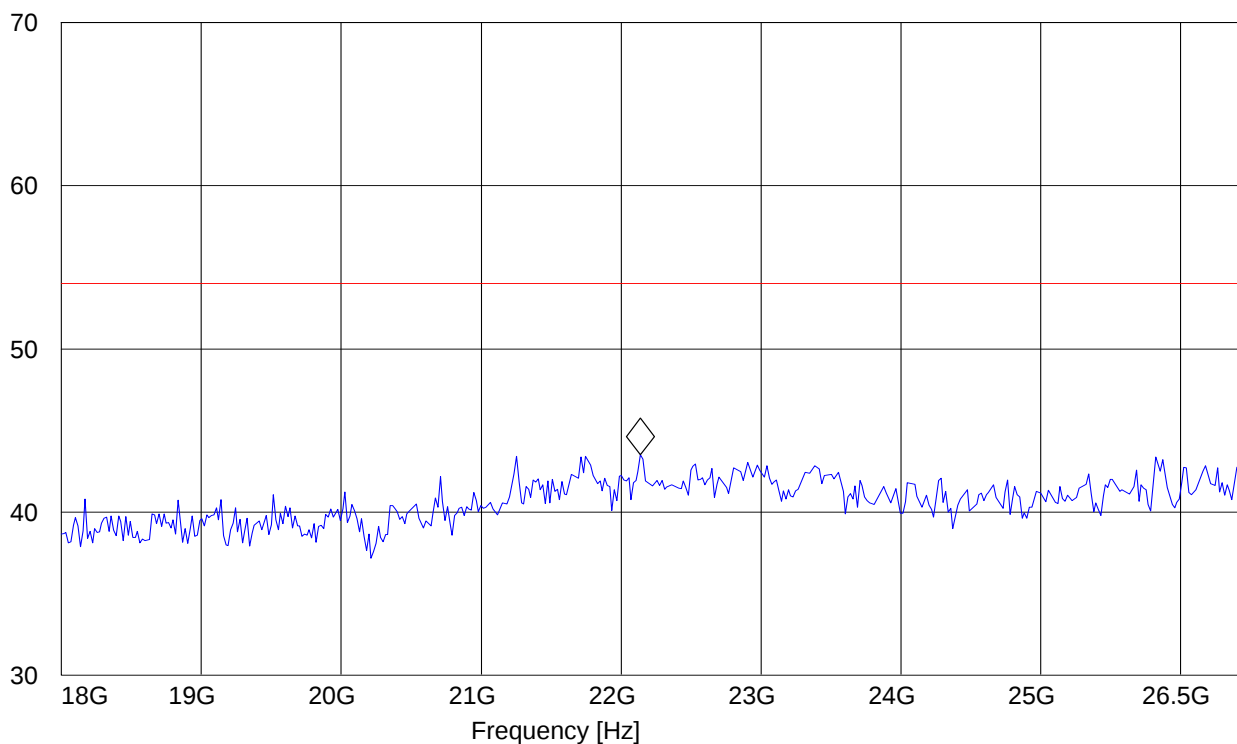
18-26.5GHz (5785MHz)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 22.139278557 GHz 43.5 dB μ V/m

Level [dB μ V/m]

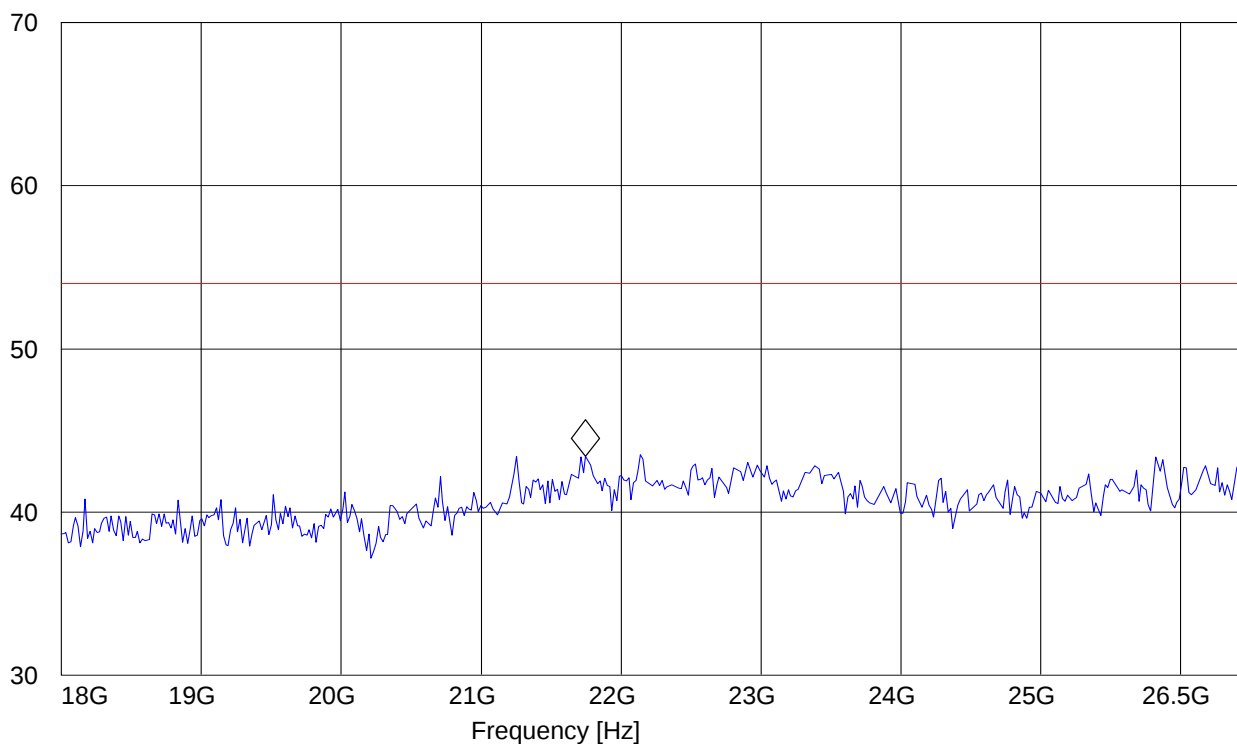
18-26.5GHz (5825MHz)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 165
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 21.74749499 GHz

43.43 dB μ V/mLevel [dB μ V/m]

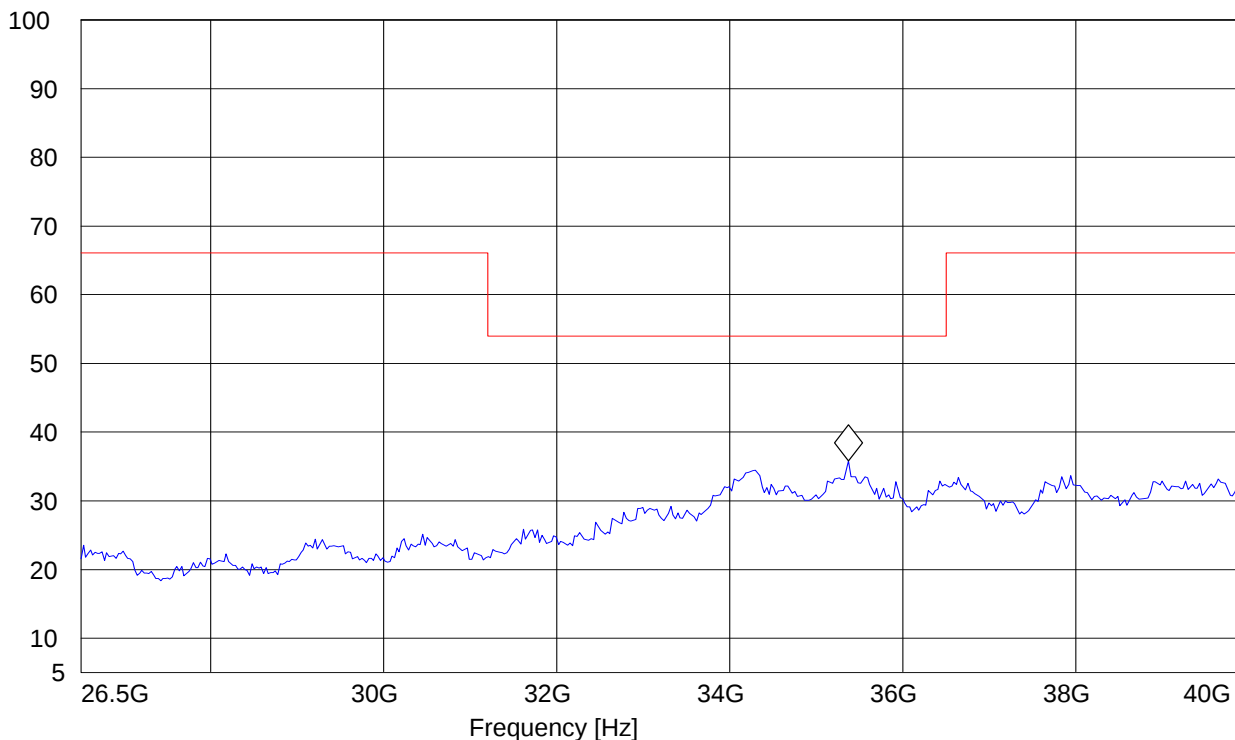
26.5-40GHz**Note:** This plot is valid for low, mid, high channels (worst-case plot).**Note:** Peak Reading vs. Average limit

EUT: Laptop
Customer:: Sony
Test Mode: 802.11a CH 157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40.0 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 35.373747495 GHz 35.83 dB μ V/m

Level [dB μ V/m]

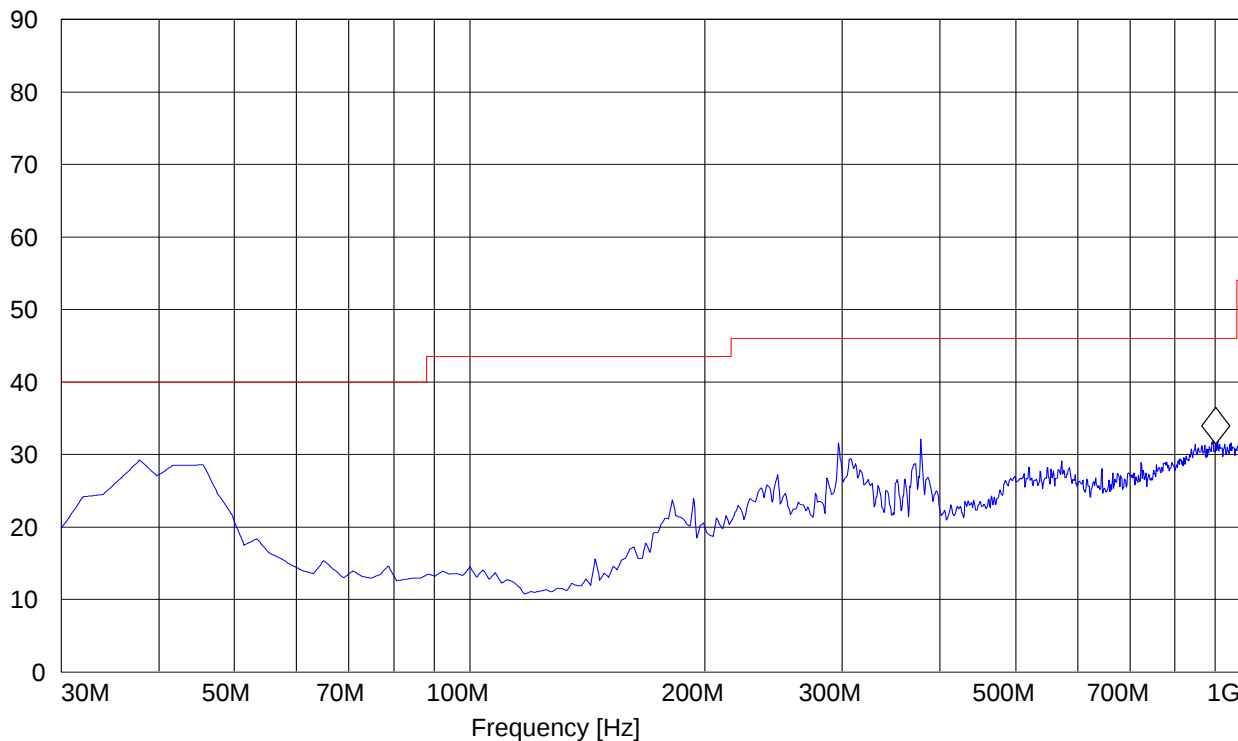
5.3.6 RESULTS Sub-band 2 802.11n HT20 MODE**30MHz – 1GHz, Antenna: Vertical**

Note: This plot is valid for low, mid, high channels (worst-case plot).

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH157
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert

Marker: 900.861723 MHz 31.49 dB μ V/mLevel [dB μ V/m]

30MHz – 1GHz, Antenna: Horizontal

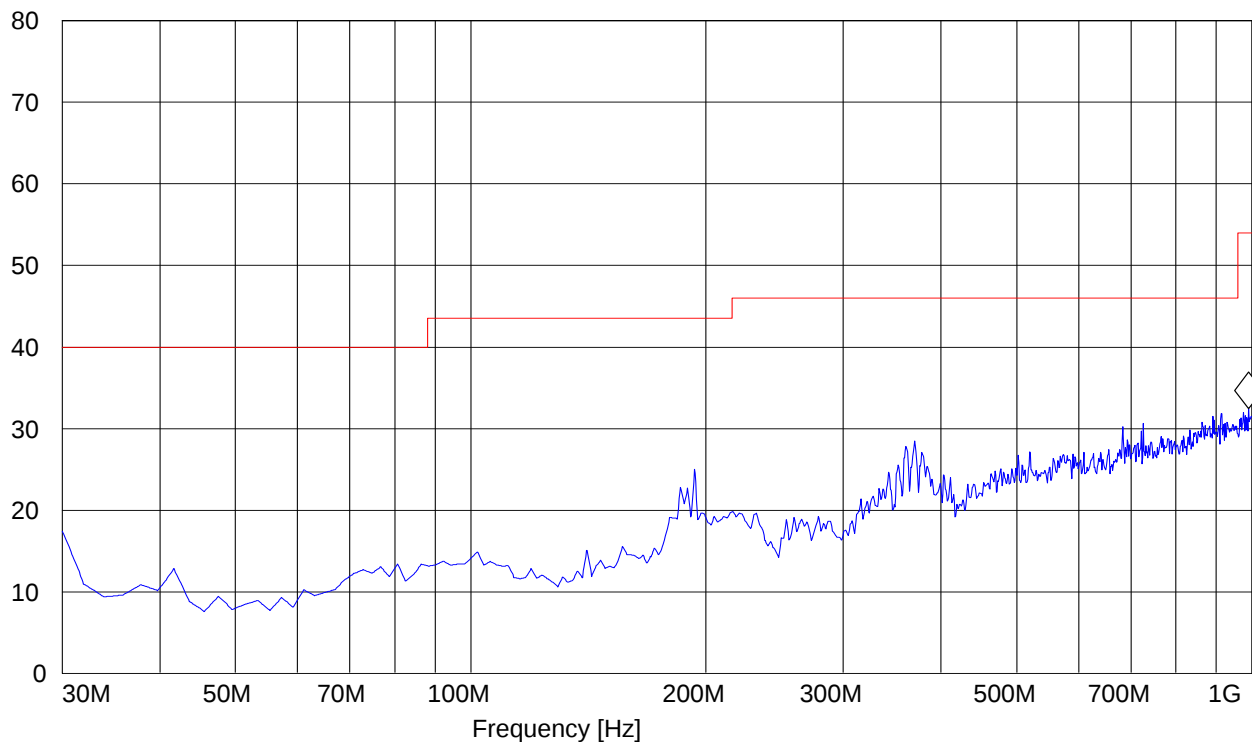
Note: This plot is valid for low, mid, high channels (worst-case plot).

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz

Marker: 990.280561 MHz

32.43 dB μ V/mLevel [dB μ V/m]

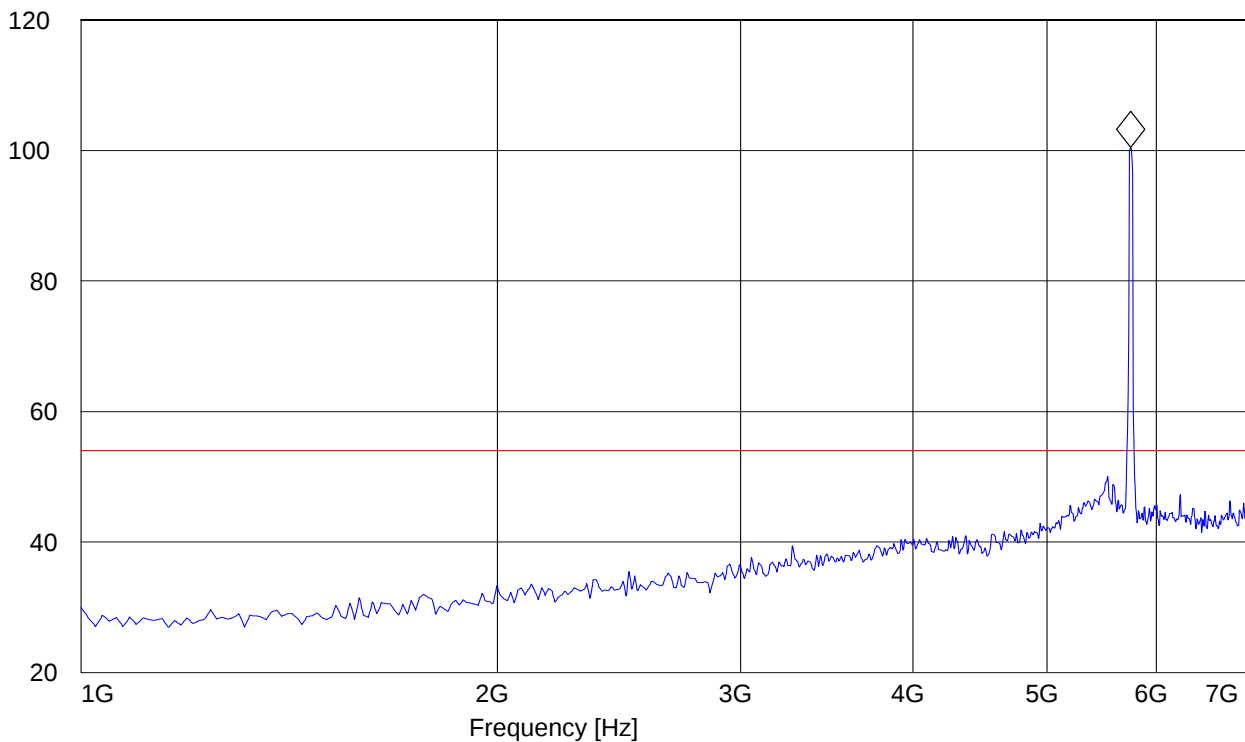
1-7GHz (5745MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 149
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn

Marker: 5.749498998 GHz 100.45 dB μ V/m

Level [dB μ V/m]

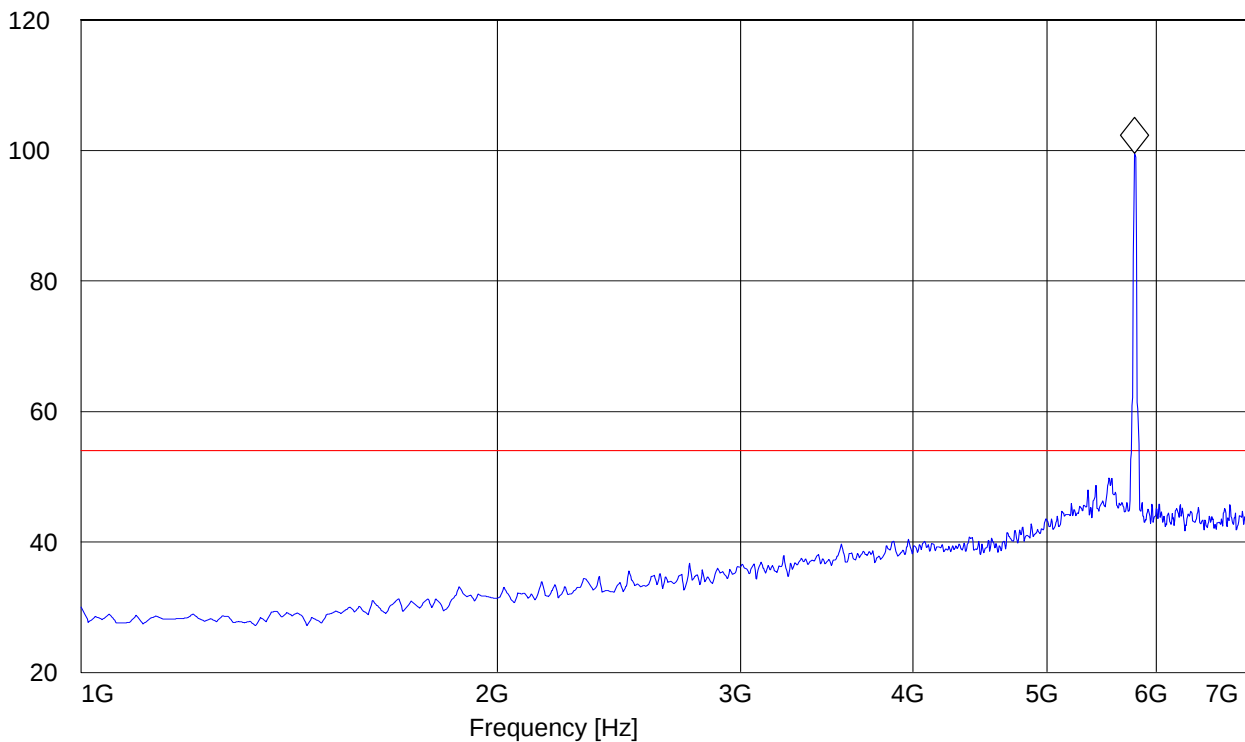
1-7GHz (5785MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn

Marker: 5.785571142 GHz 99.55 dB μ V/m

Level [dB μ V/m]

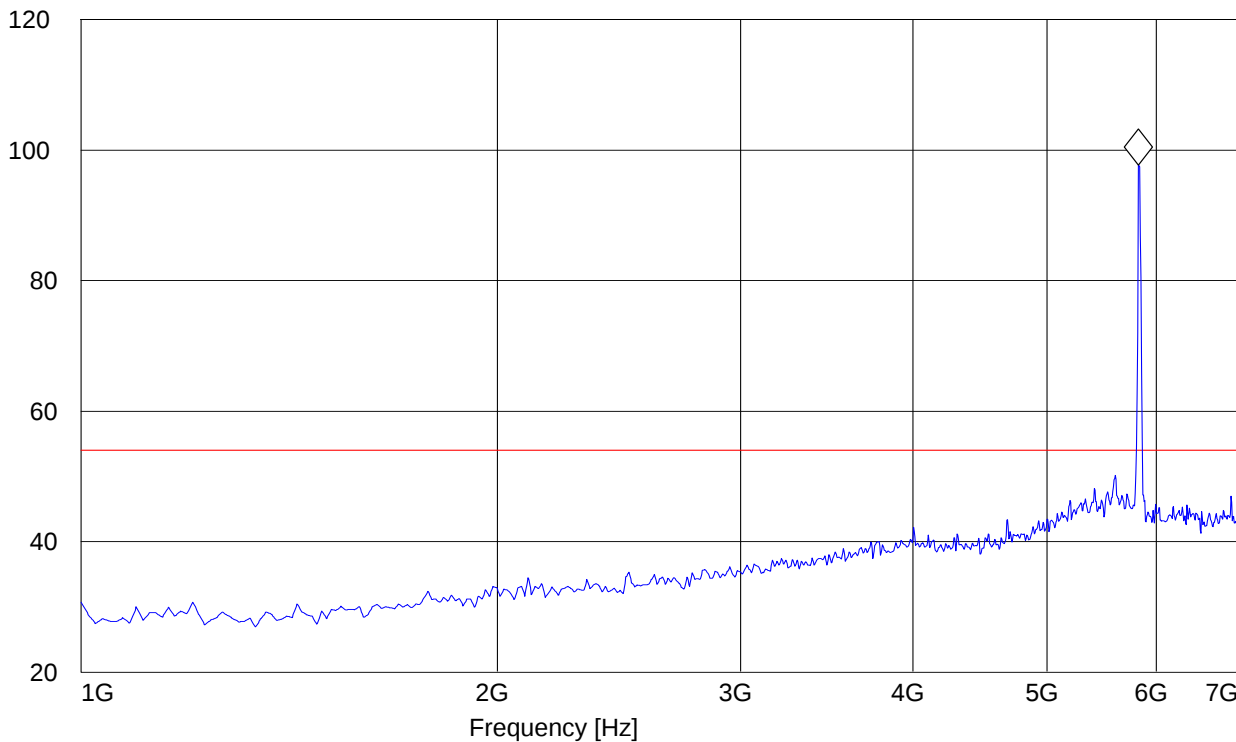
1-7GHz (5825MHz)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 165
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn

Marker: 5.821643287 GHz 97.66 dB μ V/m

Level [dB μ V/m]

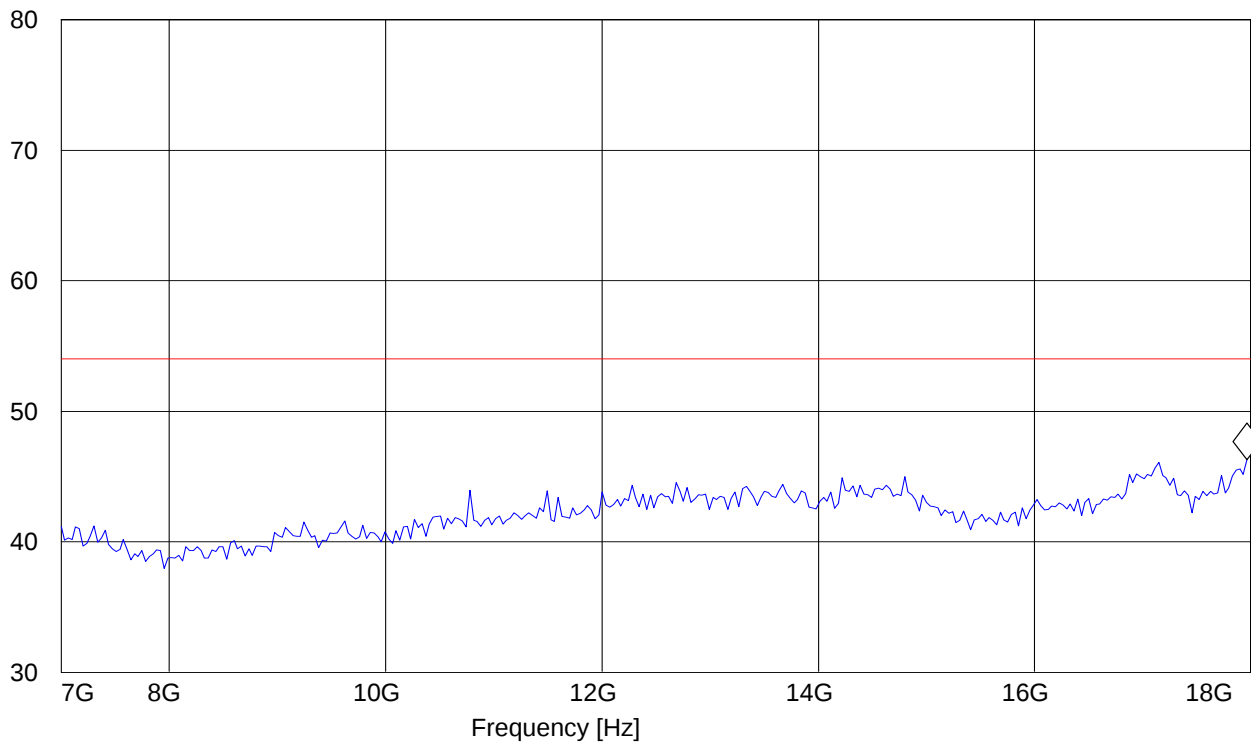
7-18GHz (5745MHz)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 149
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments: 6.2GHz HPF

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz

Marker: 17.965931864 GHz 46.29 dB μ V/m

Level [dB μ V/m]

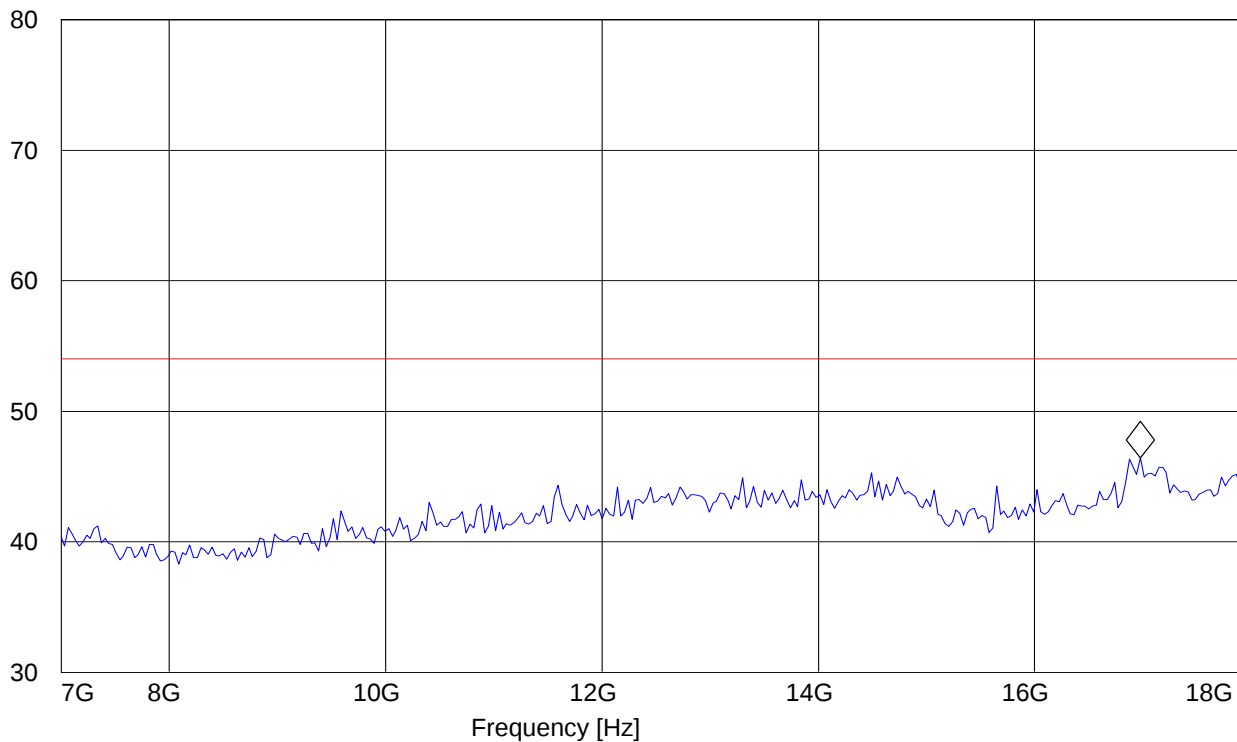
7-18GHz (5785MHz)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments: 6.2GHz HPF

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz

Marker: 16.977955912 GHz 46.43 dB μ V/m

Level [dB μ V/m]

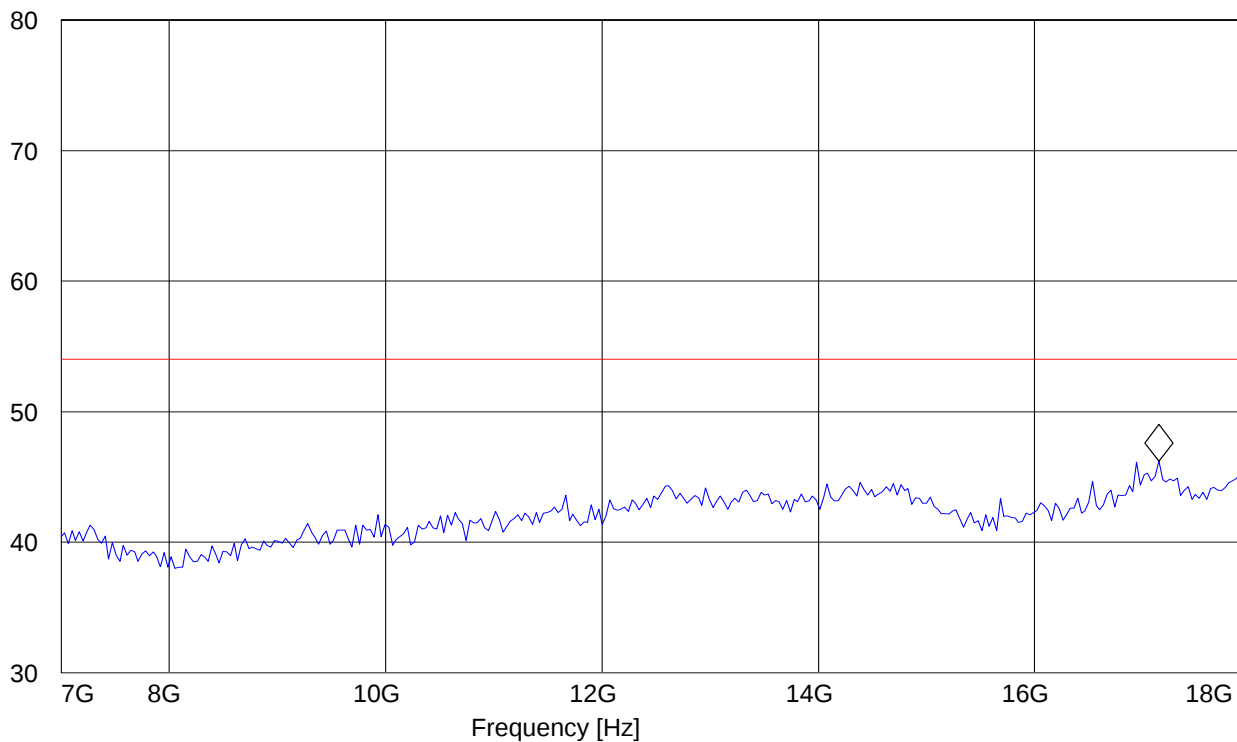
7-18GHz (5825MHz)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 165
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments: 6.2GHz HPF

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz

Marker: 17.148296593 GHz 46.24 dB μ V/m

Level [dB μ V/m]

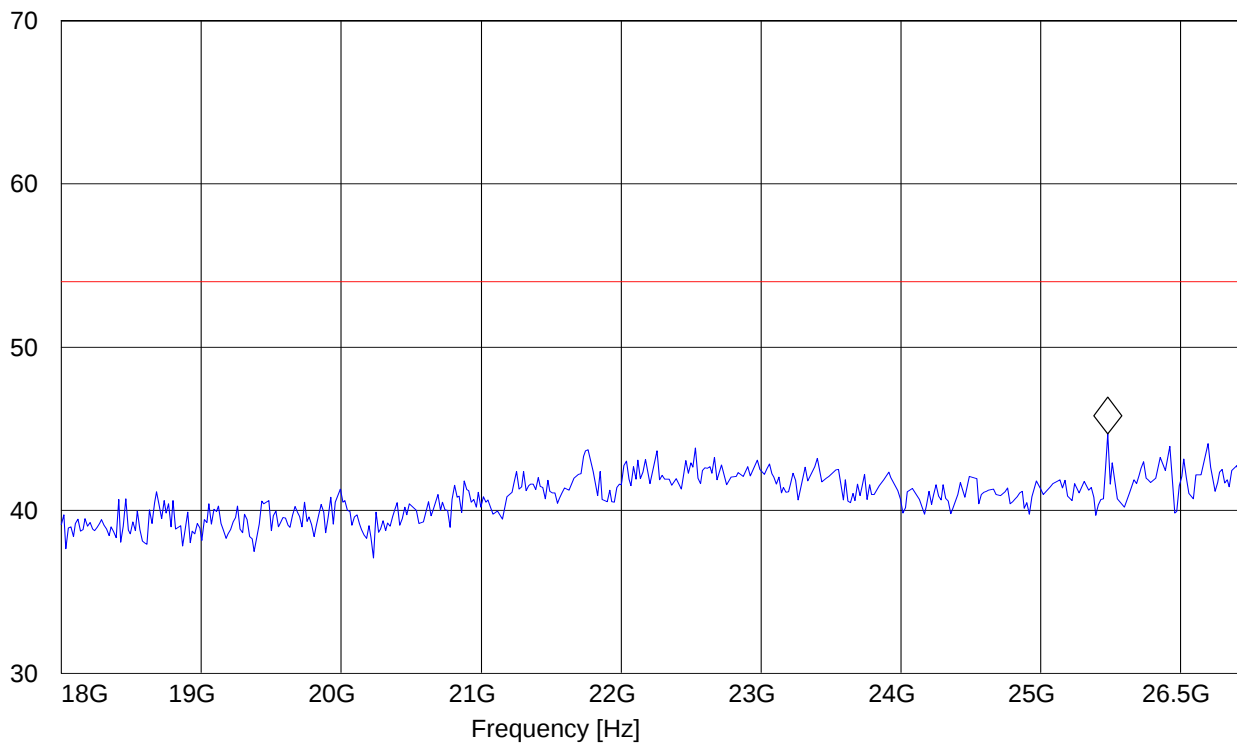
18-26.5GHz**Note:** This plot is valid for low, mid, high channels (worst-case plot).**Note:** Peak Reading vs. Average limit

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 25.477955912 GHz 44.69 dB μ V/m

Level [dB μ V/m]

26.5-40GHz

Note: This plot is valid for low, mid, high channels (worst-case plot).

Note: Peak Reading vs. Average limit

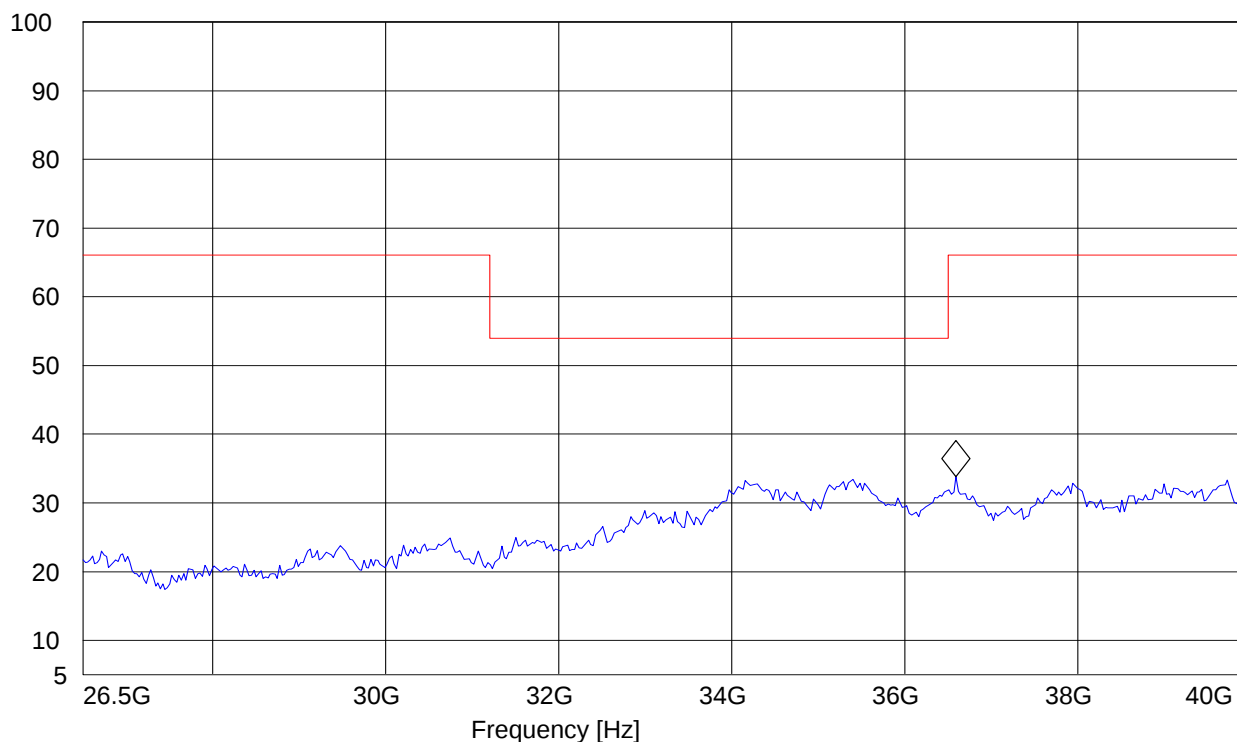
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n20 CH 157
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40.0 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 36.591182365 GHz 33.82 dB μ V/m

Level [dB μ V/m]



5.3.7 RESULTS Sub-band 2 802.11n HT40 MODE**30MHz – 1GHz, Antenna: Vertical**

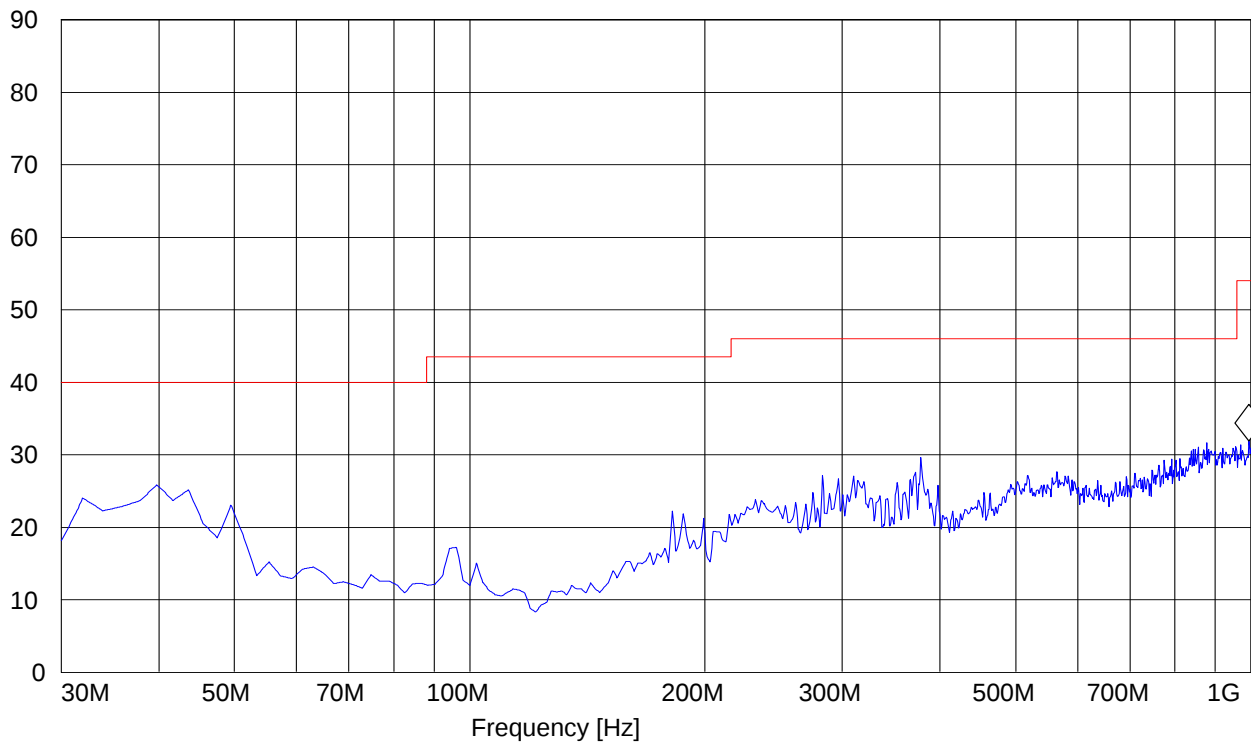
Note: This plot is valid for low, mid, high channels (worst-case plot).

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH159
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert

Marker: 994.168337 MHz

31.91 dB μ V/mLevel [dB μ V/m]

30MHz – 1GHz, Antenna: Horizontal

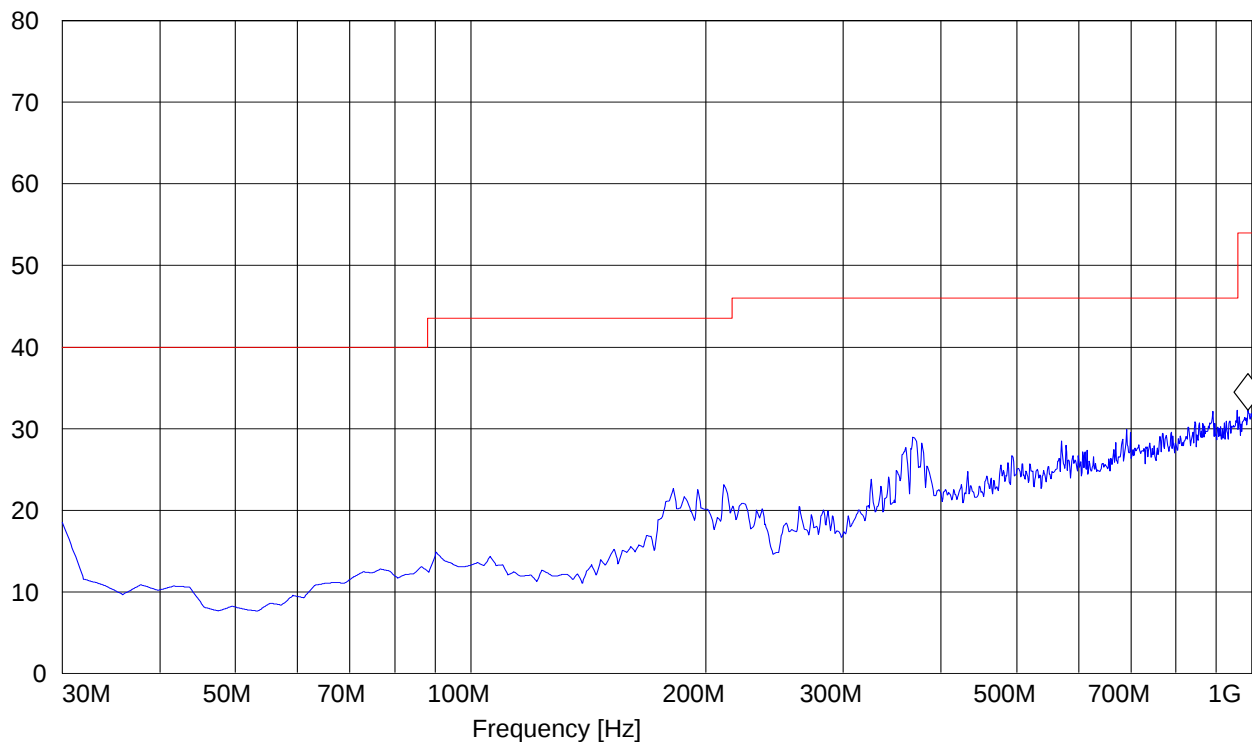
Note: This plot is valid for low, mid, high channels (worst-case plot).

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH159
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz

Marker: 988.336673 MHz

32.24 dB μ V/mLevel [dB μ V/m]

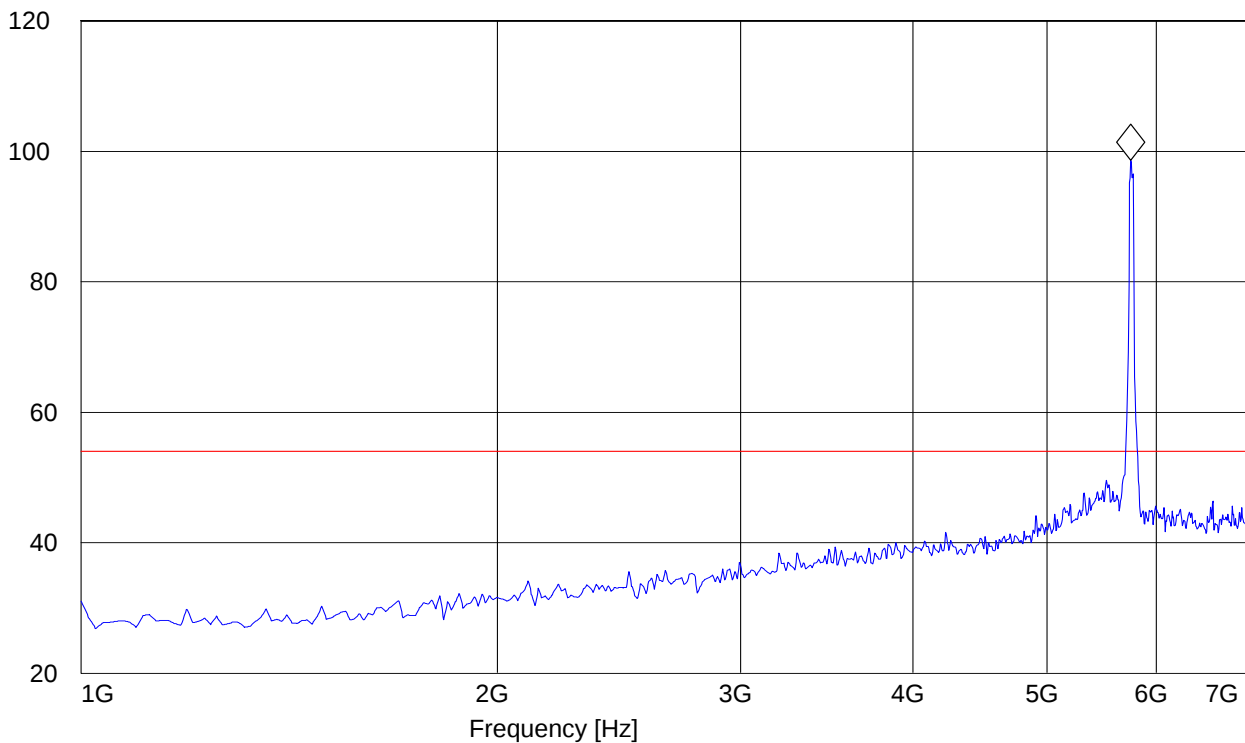
1-7GHz (5755MHZ)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 151
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn

Marker: 5.749498998 GHz 98.63 dB μ V/m

Level [dB μ V/m]

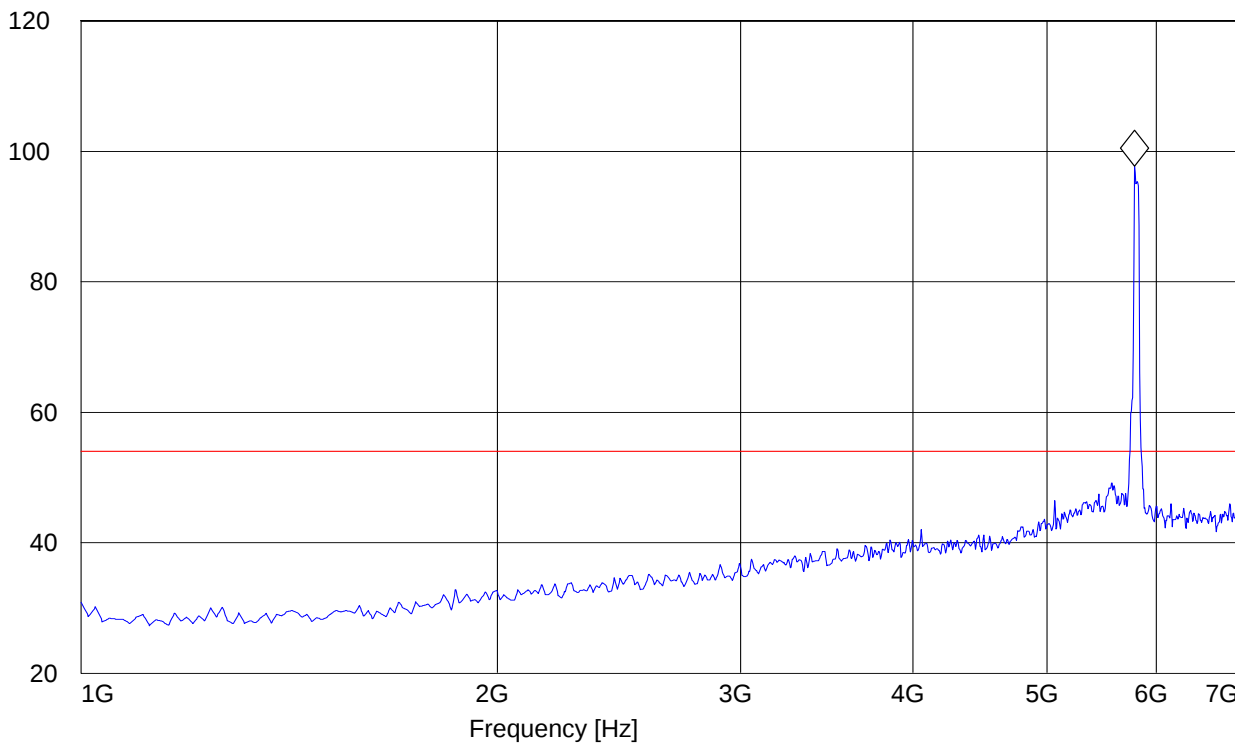
1-7GHz (5795MHZ)**Note: The peak above the limit line is the carrier freq.****Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 159
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn

Marker: 5.785571142 GHz 97.74 dB μ V/m

Level [dB μ V/m]

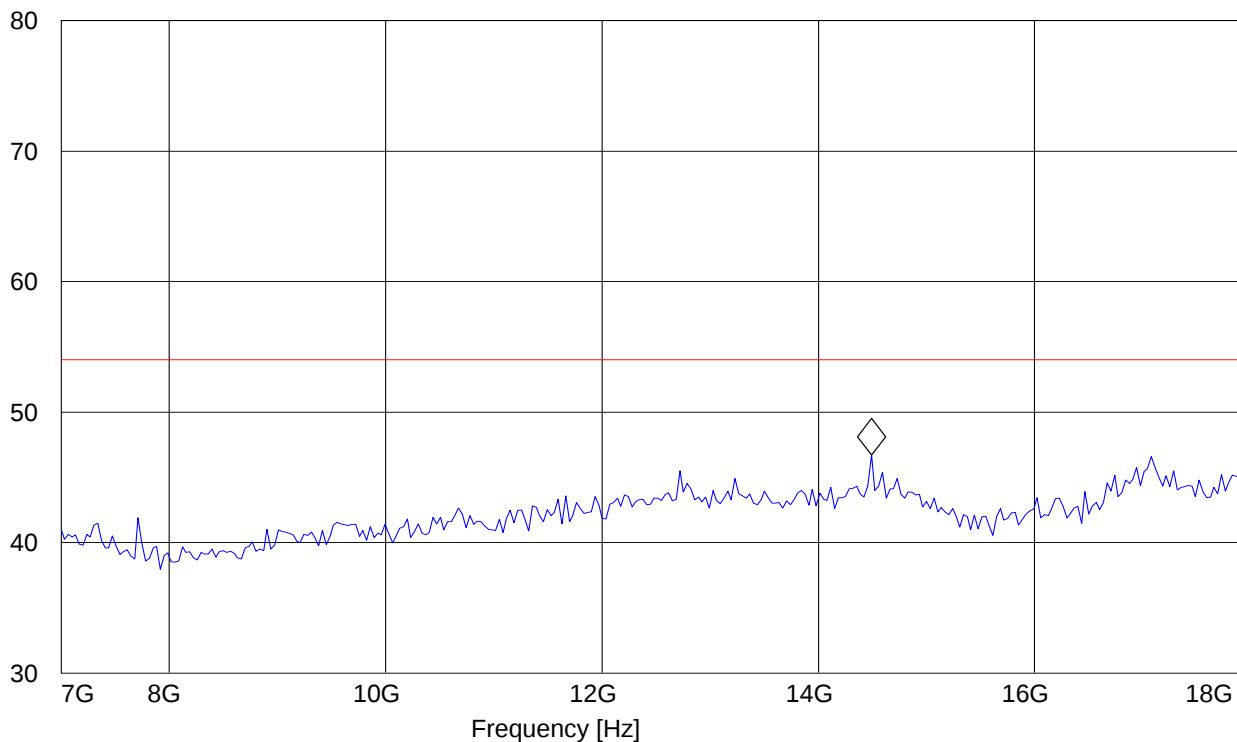
7-18GHz (5755MHZ)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 151
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments: 6.2GHz HPF

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz

Marker: 14.490981964 GHz 46.74 dB μ V/m

Level [dB μ V/m]

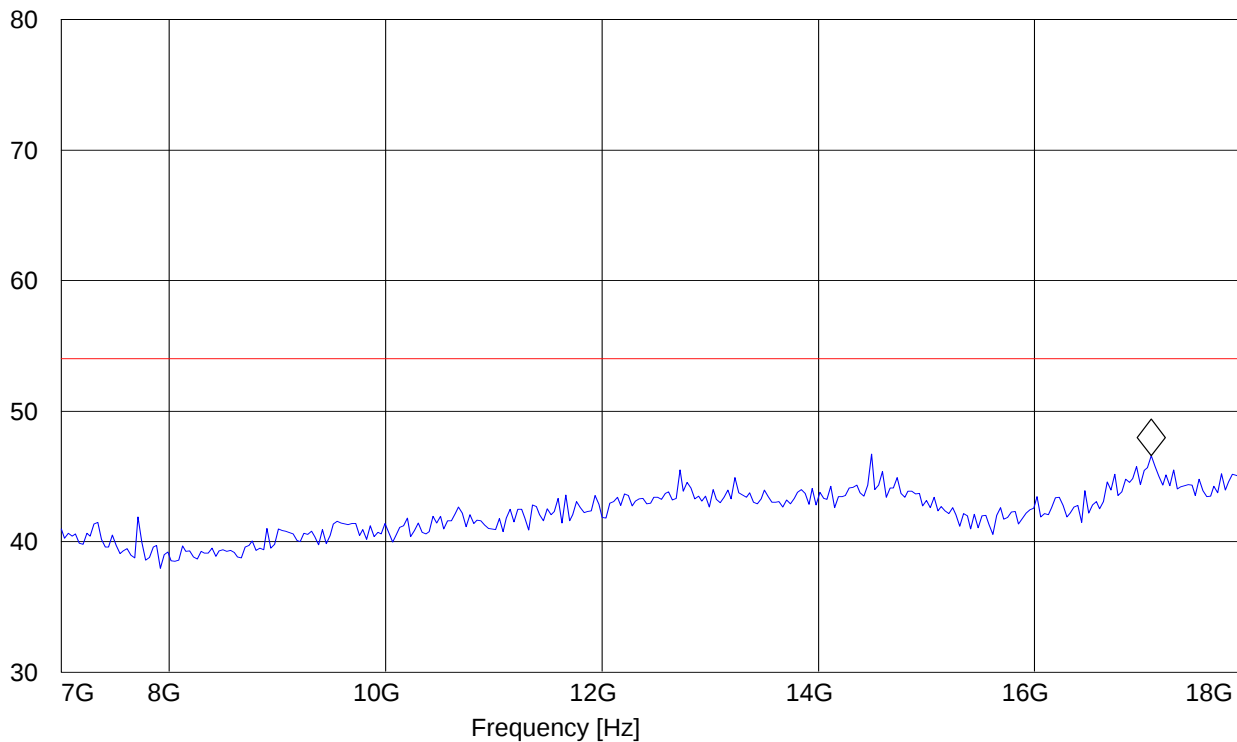
7-18GHz (5795MHZ)**Note: Peak Reading vs. Average limit**

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 159
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments: 6.2GHz HPF

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz

Marker: 17.080160321 GHz 46.6 dB μ V/m

Level [dB μ V/m]

18-26.5GHz

Note: This plot is valid for low, mid, high channels (worst-case plot).

Note: Peak Reading vs. Average limit

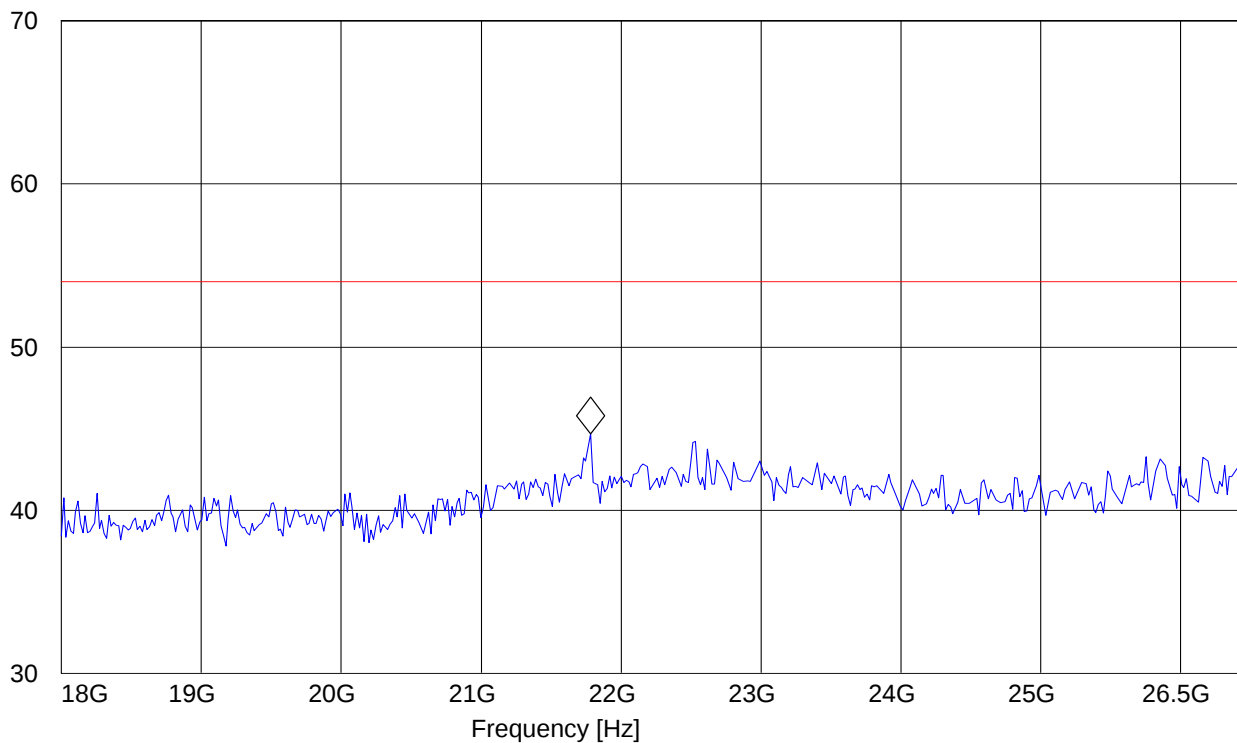
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 159
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 21.781563126 GHz 44.68 dB μ V/m

Level [dB μ V/m]



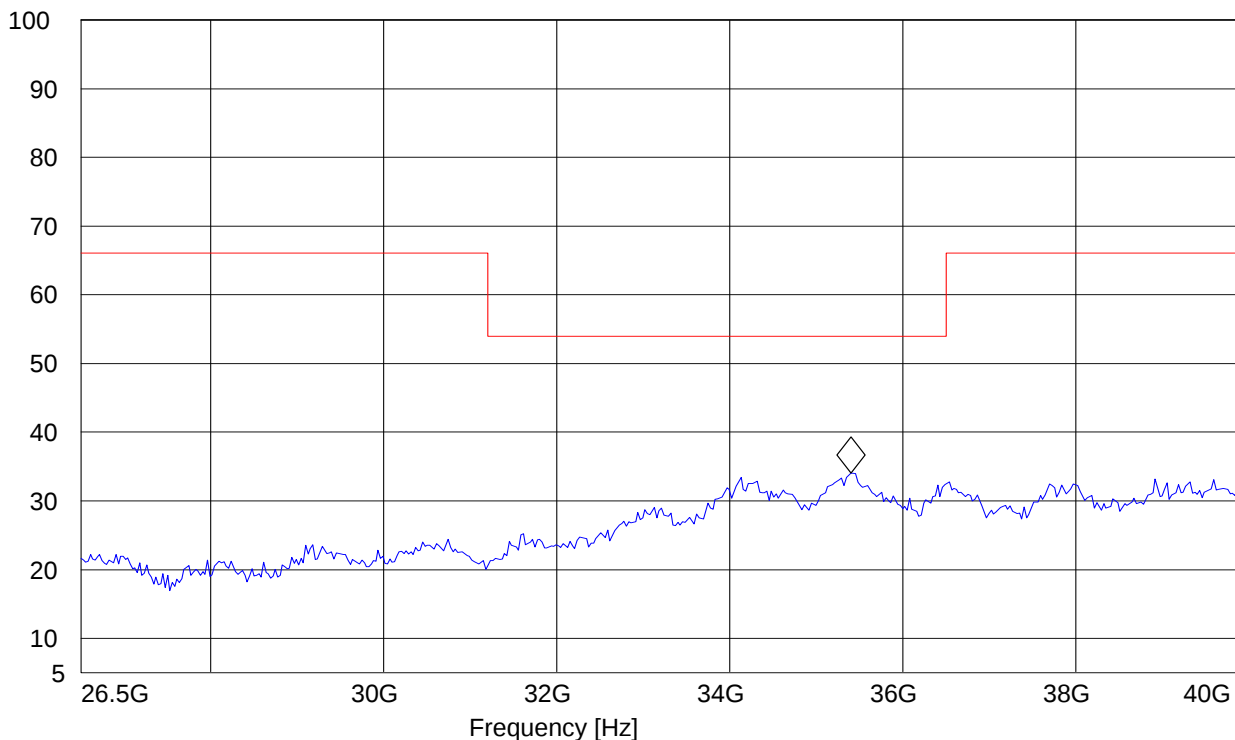
26.5-40GHz**Note:** This plot is valid for low, mid, high channels (worst-case plot).**Note:** Peak Reading vs. Average limit

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 CH 159
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40.0 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 35.400801603 GHz 34.08 dB μ V/m

Level [dB μ V/m]

5.4 Receiver Spurious Emission § 15.209/RSS210**5.4.1 Limits**

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

NOTE:

1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.
2. All measurements are done in peak mode using an average limit unless specified with the plots.
3. There are no measurable emissions up to 18GHz in Rx mode.
4. Receiver spurious emissions reported here are the worse case emissions for all receiver modes and between two receiving chains.

5.4.2 RESULTS Chain AB**30MHz – 1GHz, Antenna: Vertical**

Note: This plot is valid for low, mid, high channels (worst-case plot).

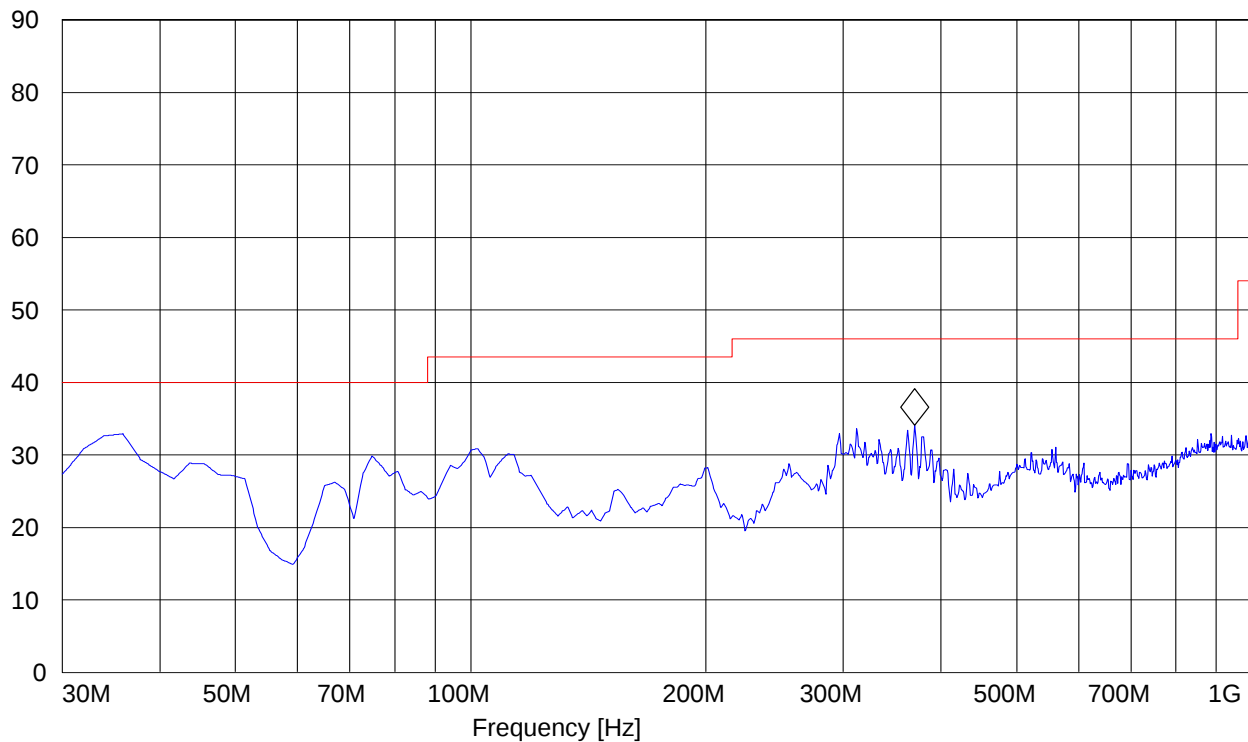
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 RX
ANT Orientation: V
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert

Marker: 370.180361 MHz 34.08 dBμV/m

Level [dBμV/m]



30MHz – 1GHz, Antenna: Horizontal

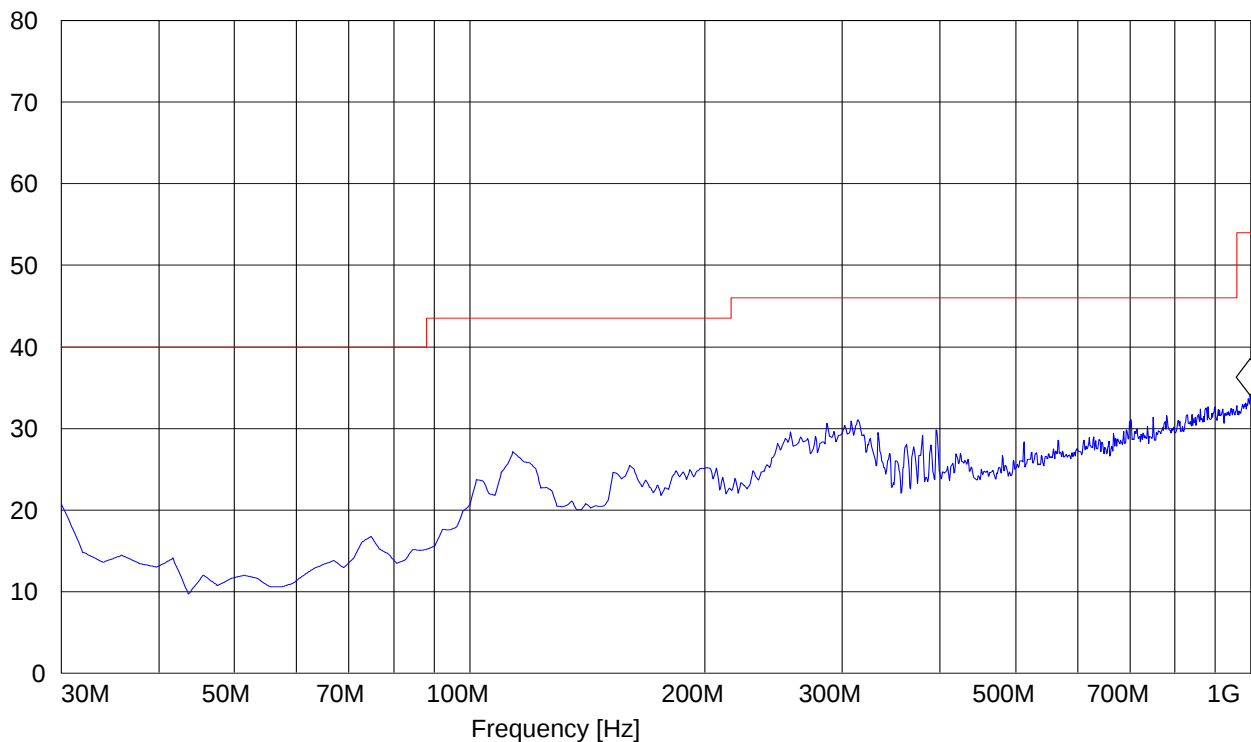
Note: This plot is valid for low, mid, high channels (worst-case plot).

EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 RX
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz

Marker: 998.056112 MHz

34.03 dB μ V/mLevel [dB μ V/m]

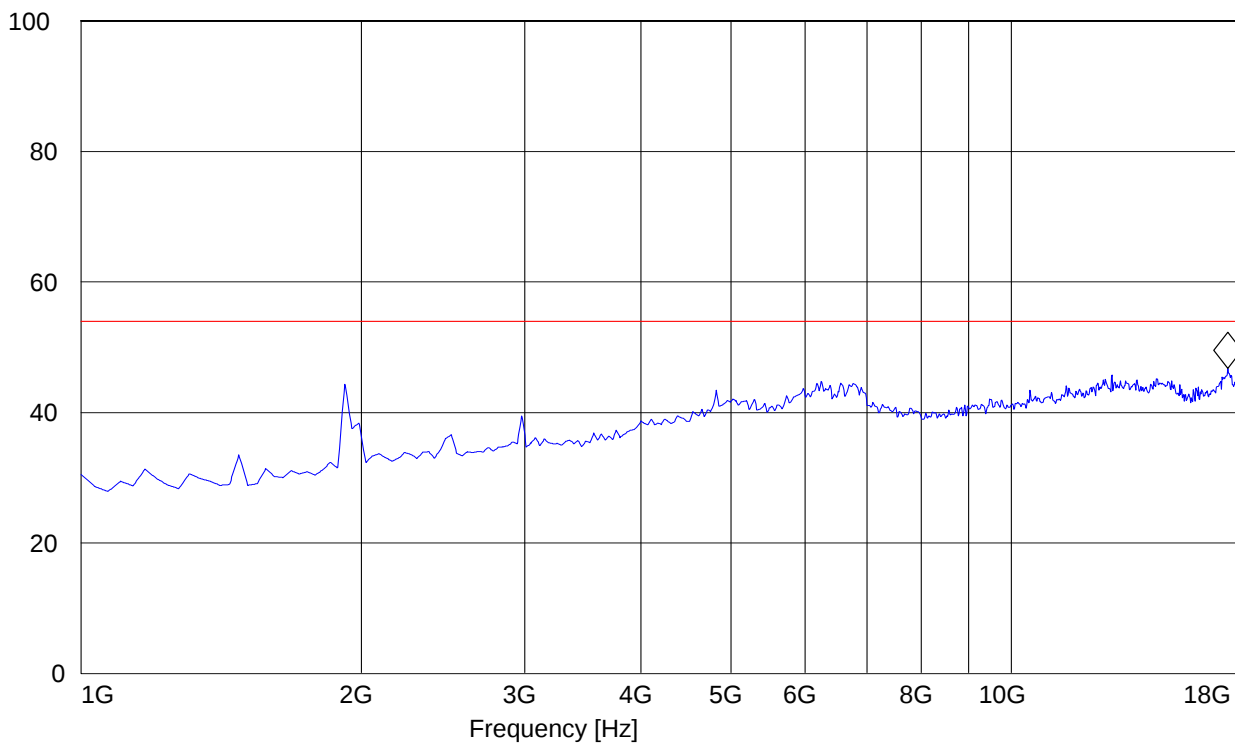
1-18GHz**Note: Peak Reading vs. Average limit**

EUT / Description: Laptop
Manufacturer: Sony
Operation Mode: 802.11n40 RX
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: Chris
Voltage: AC Adapter
Comments::

SWEEP TABLE: "FCC15.247_1-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

Marker: 17.080160321 GHz 46.75 dB μ V/m

Level [dB μ V/m]

18-26.5GHz**Note:** Peak Reading vs. Average limit

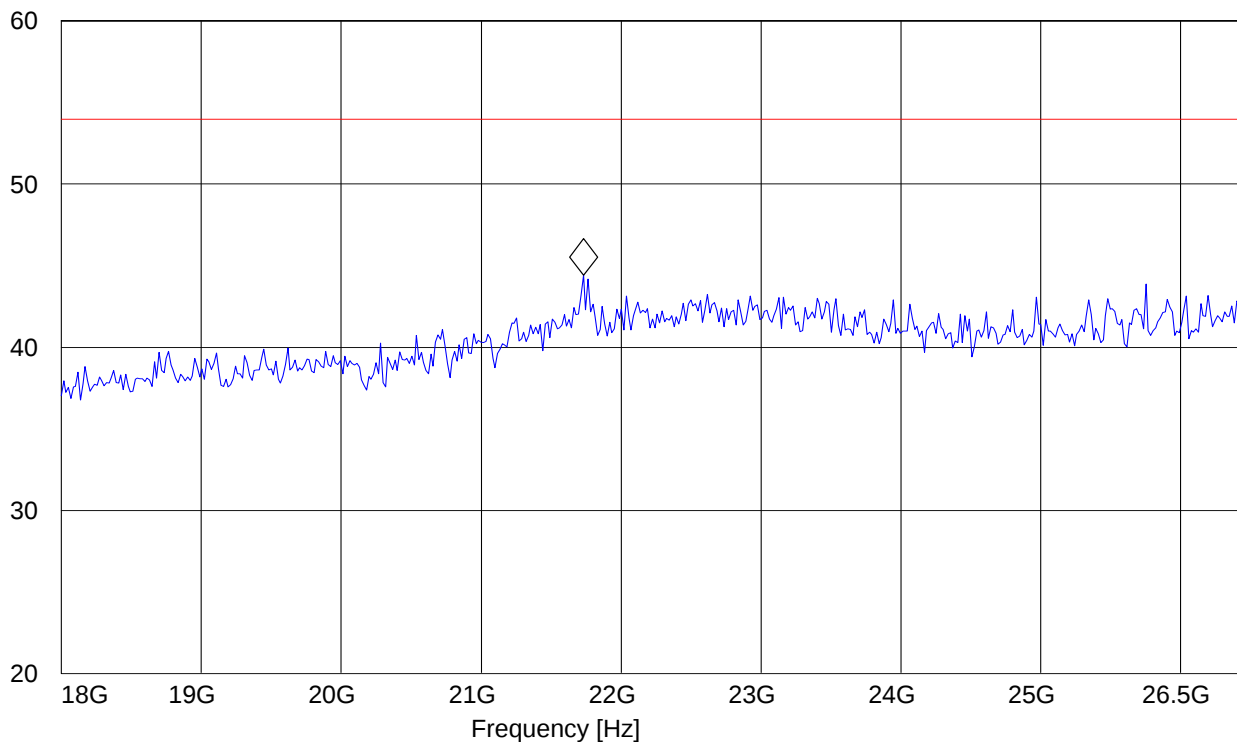
EUT: Laptop
Customer:: Sony
Test Mode: 802.11n40 RX
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter
Comments:

SWEEP TABLE: "FCC15.247_18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak MaxPeak	Coupled	100 kHz	Horn # 3116_18-40G

Marker: 21.730460922 GHz 44.4 dBμV/m

Level [dBμV/m]



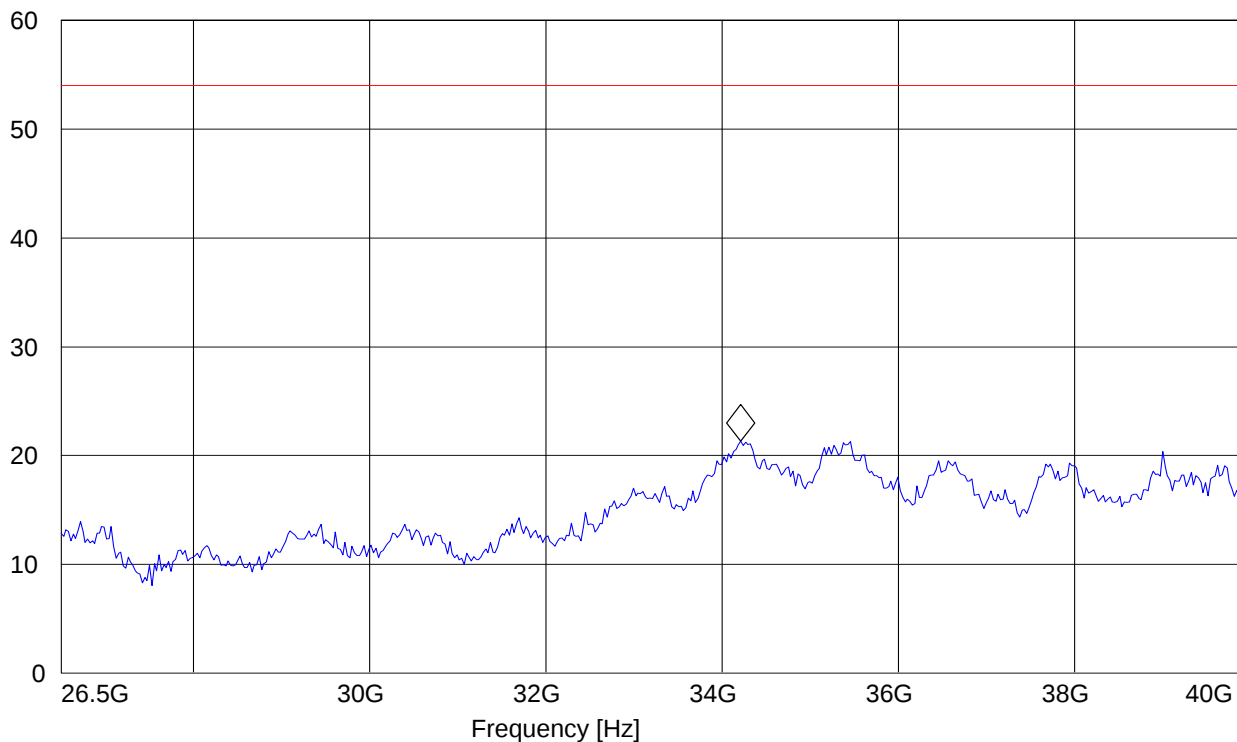
26.5-40GHz**Note: Peak Reading vs. Average limit**

EUT / Description: Laptop
Manufacturer: Sony
Operation Mode: 802.11n40 RX
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: Chris
Voltage: AC Adapter
Comments::

SWEEP TABLE: "FCC15.247_26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40.0 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

Marker: 34.210420842 GHz 21.31 dB μ V/m

Level [dB μ V/m]

6 Conducted Measurements

6.1 6dB bandwidth and 99% bandwidth.

6.1.1 Limit

FCC15.247(a)(2) Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

RSS210 A8.2 (a): The minimum 6 dB bandwidth shall be at least 500 kHz.

6.1.2 Measurement Result:

Test Not conducted. The EUT integrates an FCC approved module. All conducted measurements are referenced from the original report for the module.

6.2 Conducted Power Measurement

6.2.1 Limit

FCC15.247 (b)(3): For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt

RSS210 A8.4(4): For systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W. Except as provided in Section A8.4(5), the e.i.r.p. shall not exceed 4 W.

6.2.2 Results

Test Not conducted. The EUT integrates an FCC approved module. All conducted measurements are referenced from the original report for the module.

6.3 Power Spectral Density

6.3.1 Limit

FCC 15.247 (e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

6.3.2 Results

Test Not conducted. The EUT integrates an FCC approved module. All conducted measurements are referenced from the original report for the module.

6.4 Conducted Spurious Emission

6.4.1 Limit

§15.247(d) & RSS-210 (A8.5): -30dBc

6.4.2 Results:

Test Not conducted. The EUT integrates an FCC approved module. All conducted measurements are referenced from the original report for the module.

6.5 AC POWER LINE CONDUCTED EMISSIONS § 15.107/207**6.5.1 LIMITS****Technical specification: 15.107 / 15.207 (Revised as of August 20, 2002)**

§15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Limit

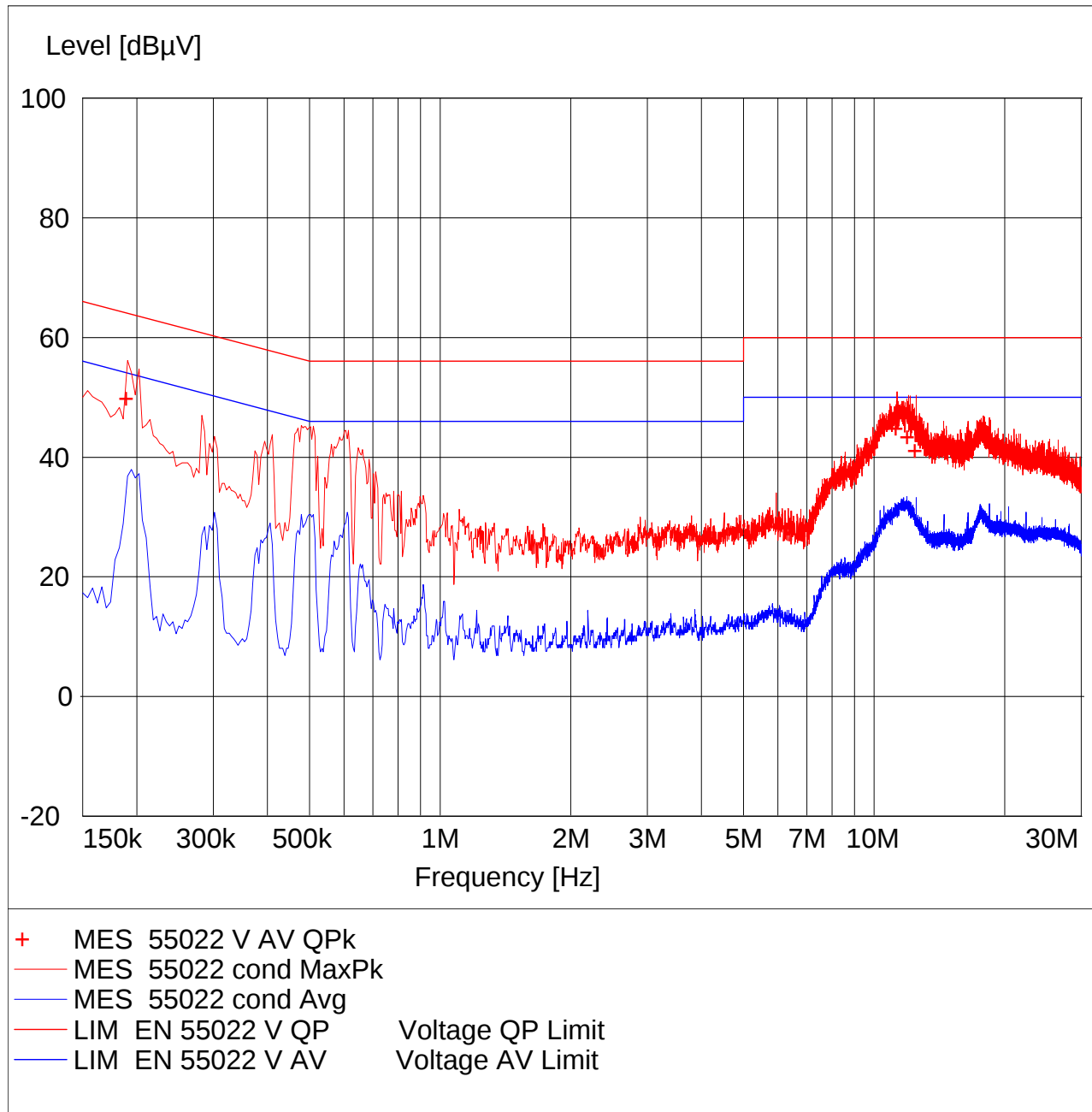
Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

ANALYZER SETTINGS: RBW = 10KHz**VBW = 10KHz**

Note: AC Line Conducted Emission reported here are the worse cases among all operating modes.

6.5.2 RESULTS Sub-band 1 802.11n HT20 Line:

EUT: Laptop
Manufacturer: Sony
Test Mode: 802.11n; 20 MHz
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: Chris
Power Supply: : AC Adapter
Comments: : Line



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MEASUREMENT RESULT: "55022 V AV QPk"

7/25/2008 12:32AM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBμV	dB	dBμV	dB			
0.190000	49.80	0.1	64	14.2	1	---	OFF
11.278000	44.80	0.6	60	15.2	1	---	OFF
11.986000	43.40	0.7	60	16.6	1	---	OFF
12.506000	41.10	0.7	60	18.9	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description:

Voltage AV Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

LIMIT LINE: "EN 55022 V QP"

Short Description:

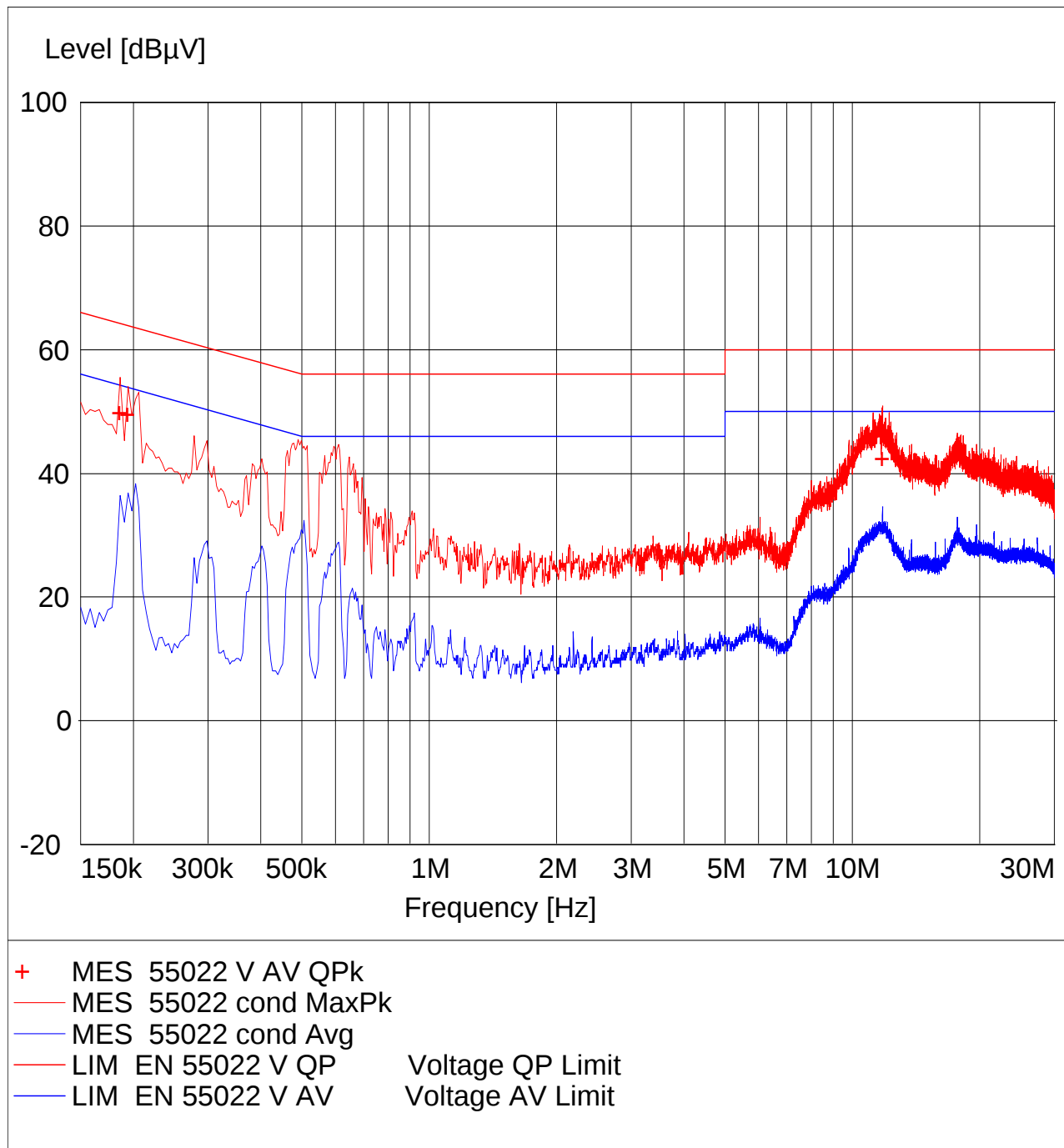
Voltage QP Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

6.5.3 RESULTS Sub-band 1 802.11n HT20 Neutral:

EUT: Laptop
Manufacturer: Sony
Test Mode: 802.11n; 20MHz
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: Chris
Power Supply: : AC Adapter
Comments: : Neutral



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MEASUREMENT RESULT: "55022 V AV QPk"

7/25/2008 12:26AM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBμV	dB	dBμV	dB			
0.186000	49.80	0.1	64	14.4	1	---	OFF
0.194000	49.50	0.1	64	14.4	1	---	OFF
11.778000	42.40	0.7	60	17.6	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description:

Voltage AV Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

LIMIT LINE: "EN 55022 V QP"

Short Description:

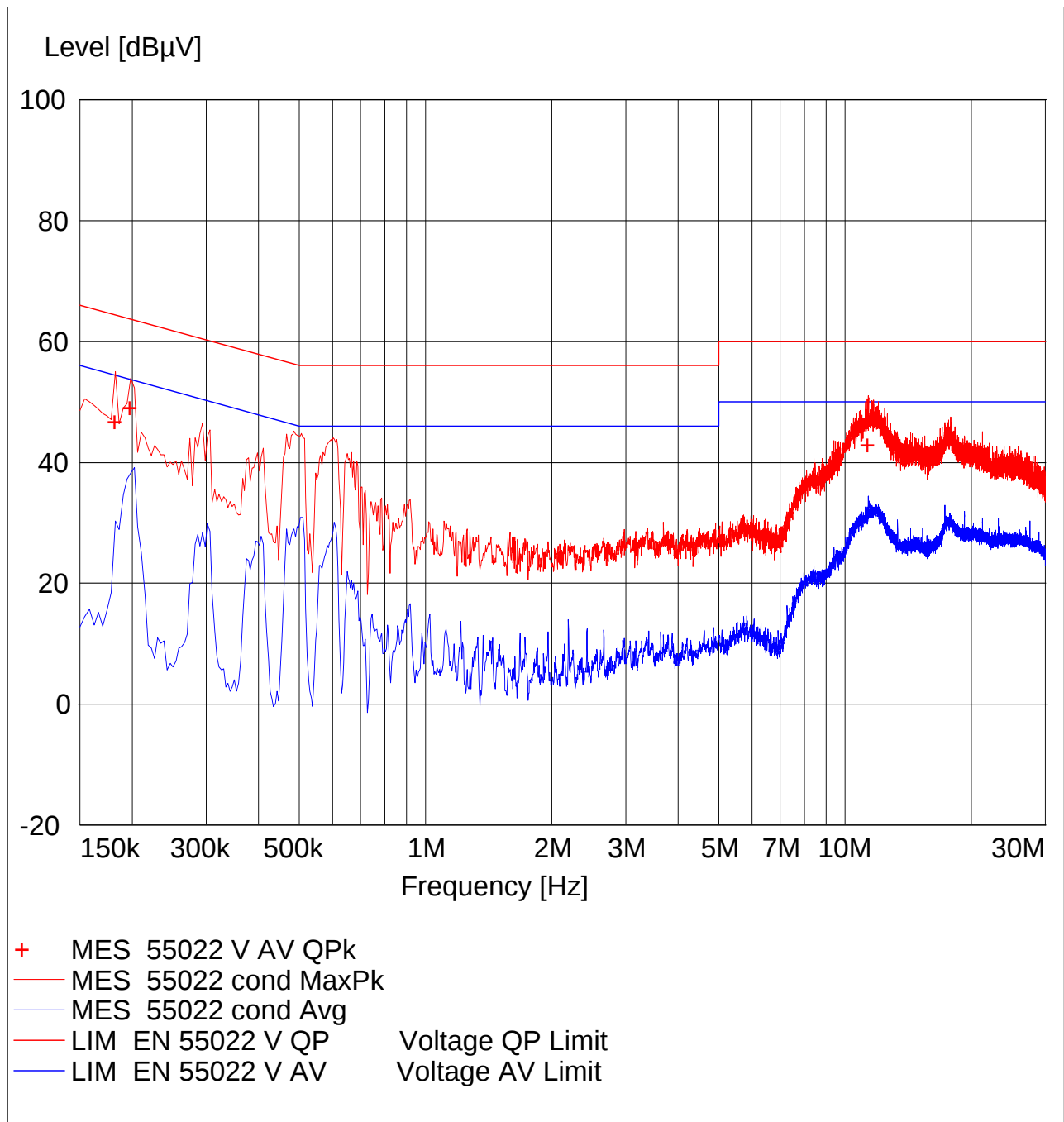
Voltage QP Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

6.5.4 RESULTS Sub-band 1 802.11n HT40 Line:

EUT: Laptop
Manufacturer: Sony
Test Mode: 802.11n; 40MHz
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: Chris
Power Supply: : AC Adapter
Comments: : Line



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MEASUREMENT RESULT: "55022 V AV QPk"

7/25/2008 12:37AM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBμV	dB	dBμV	dB			
0.182000	46.80	0.1	64	17.6	1	---	OFF
0.198000	49.00	0.1	64	14.6	1	---	OFF
11.362000	42.90	0.6	60	17.1	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description:

Voltage AV Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

LIMIT LINE: "EN 55022 V QP"

Short Description:

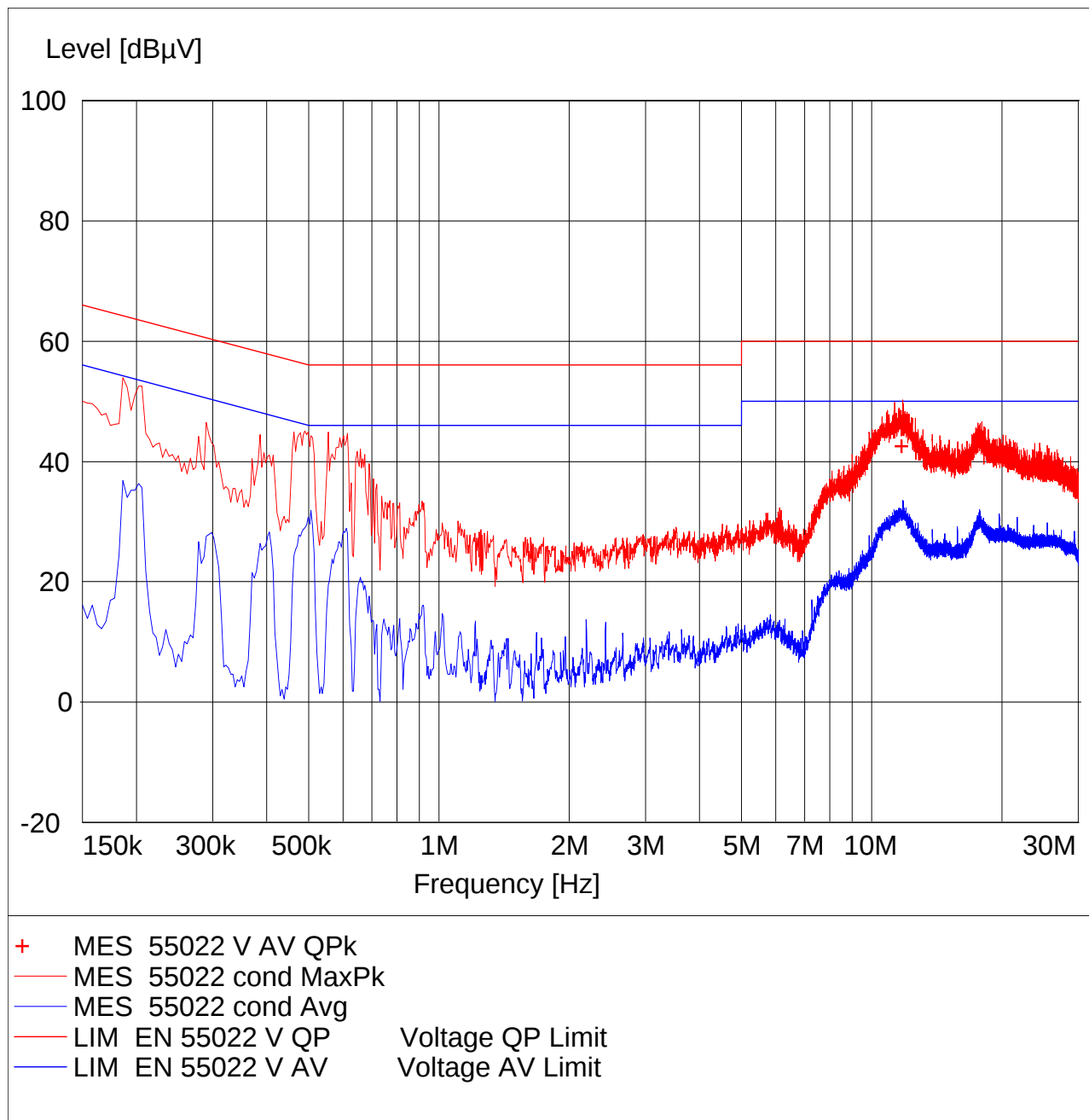
Voltage QP Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

6.5.5 RESULTS Sub-band 1 802.11n HT40 Neutral:

EUT: Laptop
Manufacturer: Sony
Test Mode: 802.11n; 40MHz
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: Chris
Power Supply: : AC Adapter
Comments: : Neutral



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MEASUREMENT RESULT: "55022 V AV QPk"

7/25/2008 12:41AM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBμV	dB	dBμV	dB			
11.794000	42.70	0.7	60	17.3	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description: Voltage AV Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

LIMIT LINE: "EN 55022 V QP"

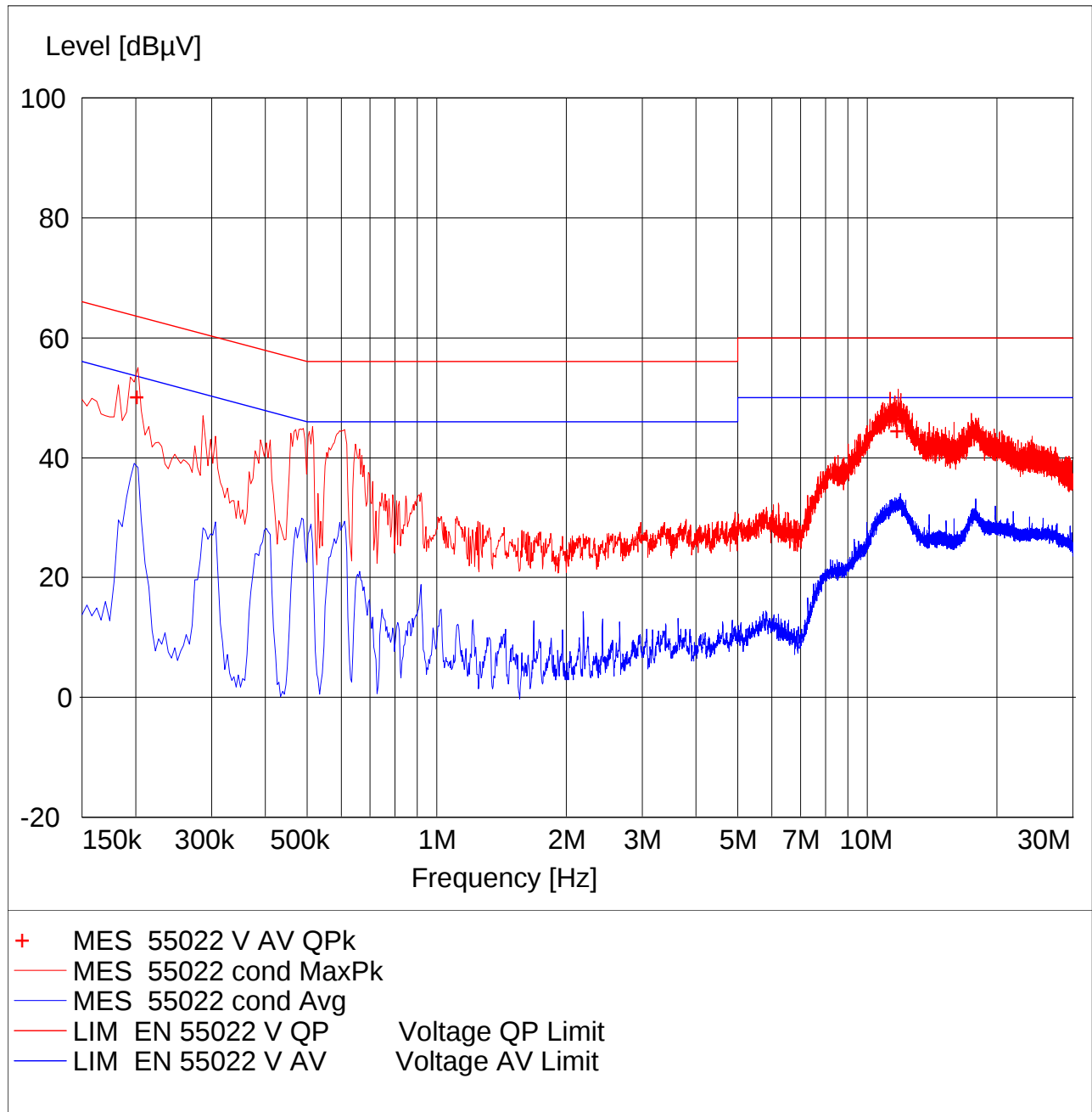
Short Description: Voltage QP Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

6.5.6 RESULTS Sub-band 2 802.11n HT20 Line:

EUT: Laptop
Manufacturer: Sony
Test Mode: 802.11n; 20MHz
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: Chris
Power Supply: : AC Adapter
Comments: : Line



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MEASUREMENT RESULT: "55022 V AV QPk"

7/25/2008 12:54AM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBμV	dB	dBμV	dB			
0.202000	50.10	0.1	64	13.4	1	---	OFF
11.790000	44.50	0.7	60	15.5	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description: Voltage AV Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

LIMIT LINE: "EN 55022 V QP"

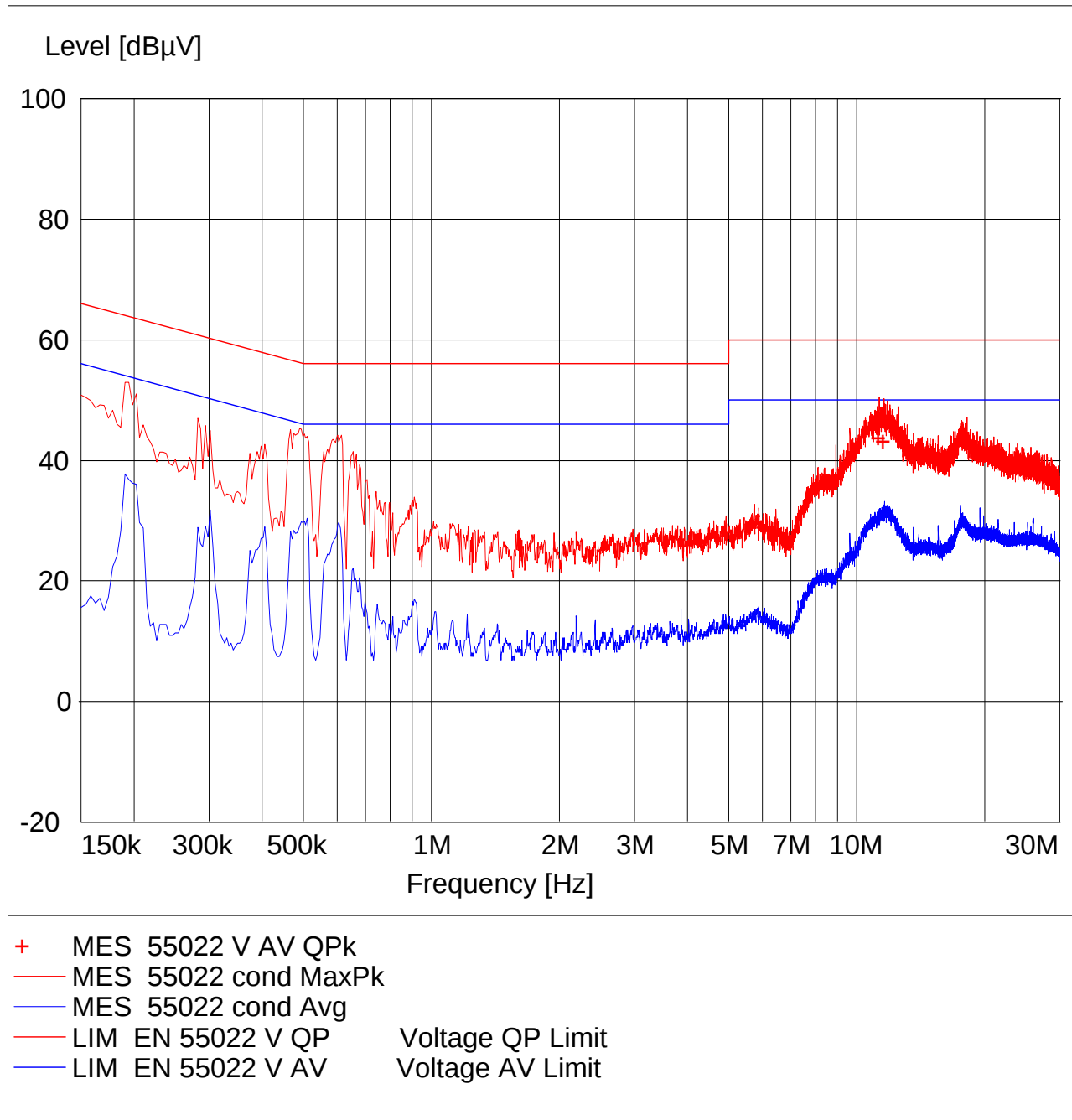
Short Description: Voltage QP Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

6.5.7 RESULTS Sub-band 2 802.11n HT20 Neutral:

EUT: Laptop
Manufacturer: Sony
Test Mode: 802.11n; 20MHz
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: Chris
Power Supply: : AC Adapter
Comments: : Neutral



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MEASUREMENT RESULT: "55022 V AV QPk"

7/25/2008 12:49AM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBµV	dB	dBµV	dB			
11.278000	43.70	0.6	60	16.3	1	---	OFF
11.578000	43.20	0.6	60	16.8	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description: Voltage AV Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBµV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

LIMIT LINE: "EN 55022 V QP"

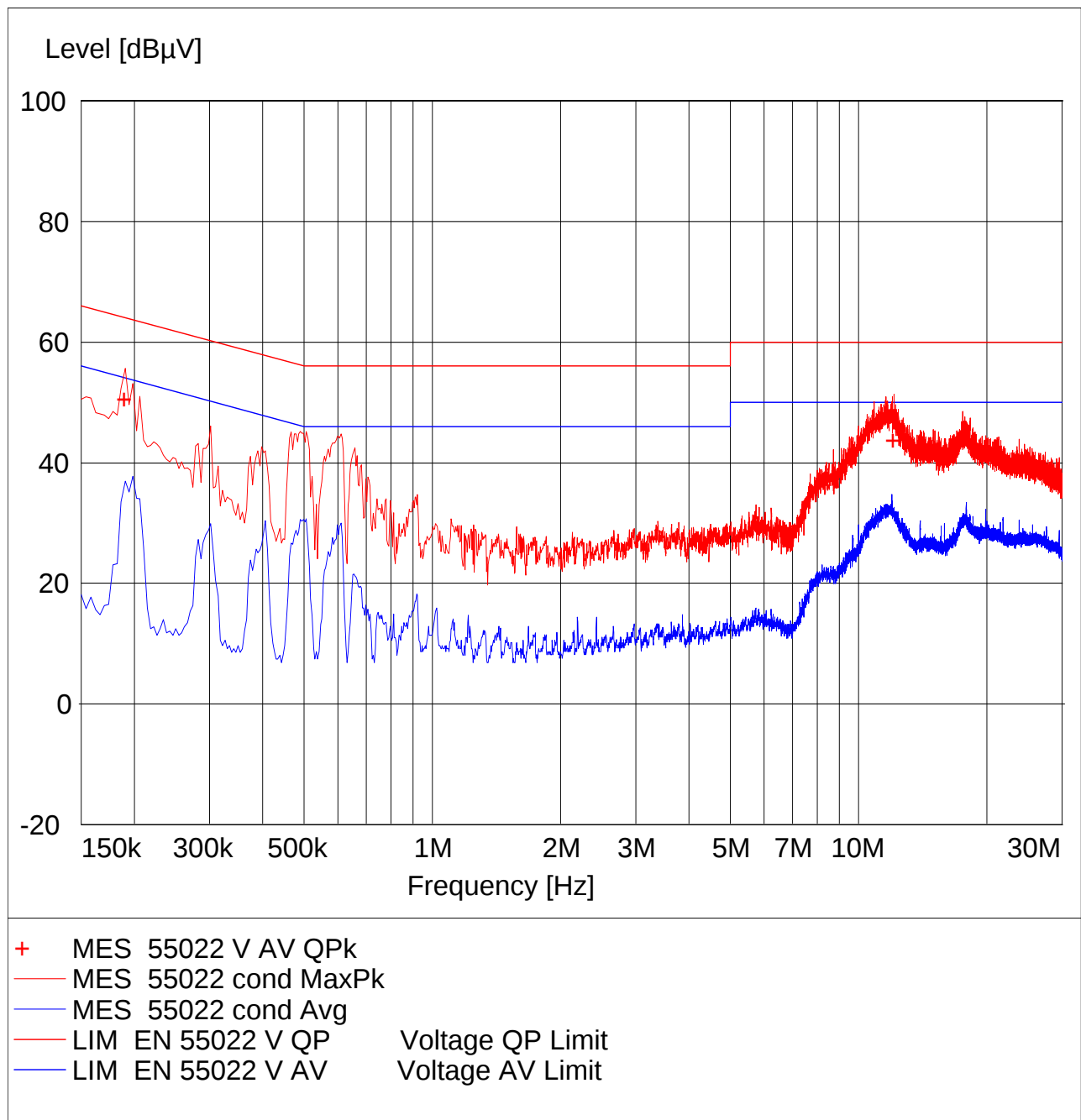
Short Description: Voltage QP Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBµV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

6.5.8 RESULTS Sub-band 2 802.11n HT40 Line:

EUT: Laptop
Manufacturer: Sony
Test Mode: 802.11n; 40MHz
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: Chris
Power Supply: : AC Adapter
Comments: : Line



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MEASUREMENT RESULT: "55022 V AV QPk"

7/25/2008 12:59AM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBµV	dB	dBµV	dB			
0.190000	50.60	0.1	64	13.4	1	---	OFF
12.102000	43.70	0.7	60	16.3	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description: Voltage AV Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBµV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

LIMIT LINE: "EN 55022 V QP"

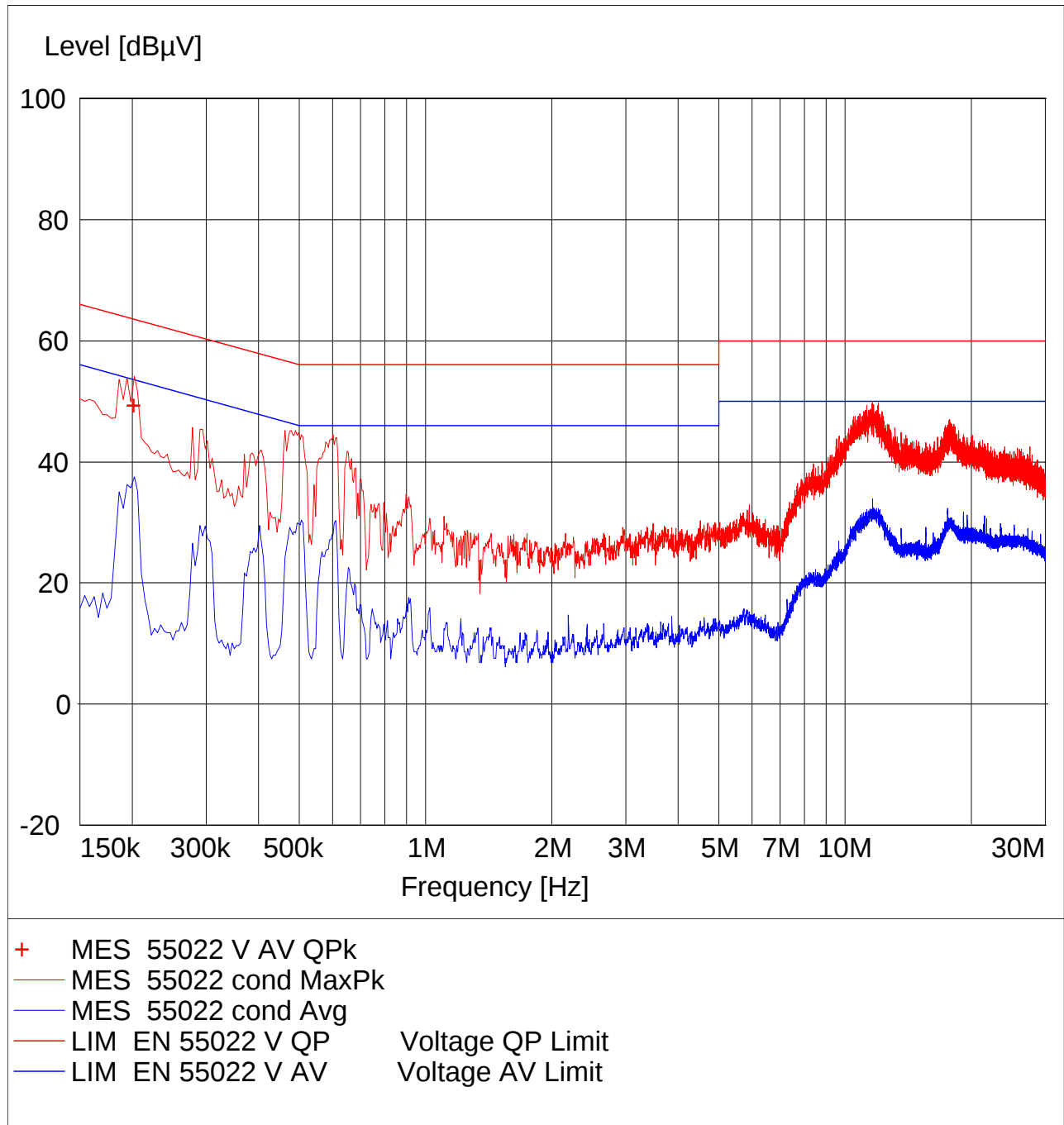
Short Description: Voltage QP Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBµV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

6.5.9 RESULTS Sub-band 2 802.11n HT40 Neutral:

EUT: Laptop
Manufacturer: Sony
Test Mode: 802.11n; 40MHz
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: Chris
Power Supply: : AC Adapter
Comments: : Neutral



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MEASUREMENT RESULT: "55022 V AV QPk"

7/25/2008 1:03AM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBμV	dB	dBμV	dB			
0.202000	49.30	0.1	64	14.2	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description: Voltage AV Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

LIMIT LINE: "EN 55022 V QP"

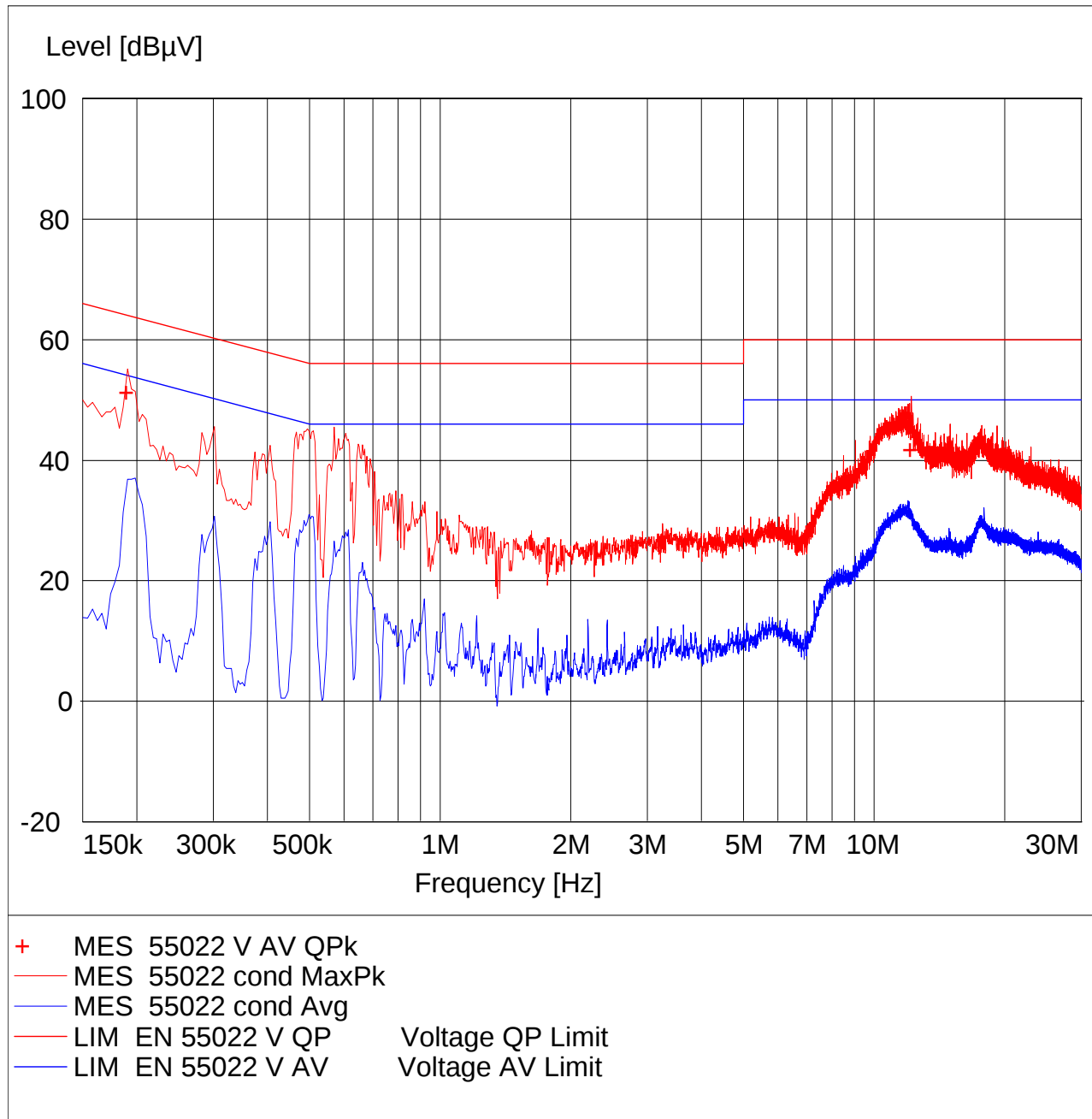
Short Description: Voltage QP Limit

4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

6.5.10 RESULTS Receiver mode Line:

EUT: Laptop
Manufacturer: Sony
Test Mode: Rx
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: Chris
Power Supply: : AC Adapter
Comments: : Line



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MEASUREMENT RESULT: "55022 V AV QPk"

7/25/2008 1:13AM

Frequency	Level	Transd	Limit	Margin	Line	PE	AUX STATE
MHz	dBμV	dB	dBμV	dB			
0.190000	51.20	0.1	64	12.8	1	---	OFF
12.190000	41.80	0.7	60	18.2	1	---	OFF

LIMIT LINE: "EN 55022 V AV"

Short Description: Voltage AV Limit
4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	56.00
0.500000	46.00
5.000000	46.00
5.000000	50.00
30.000000	50.00

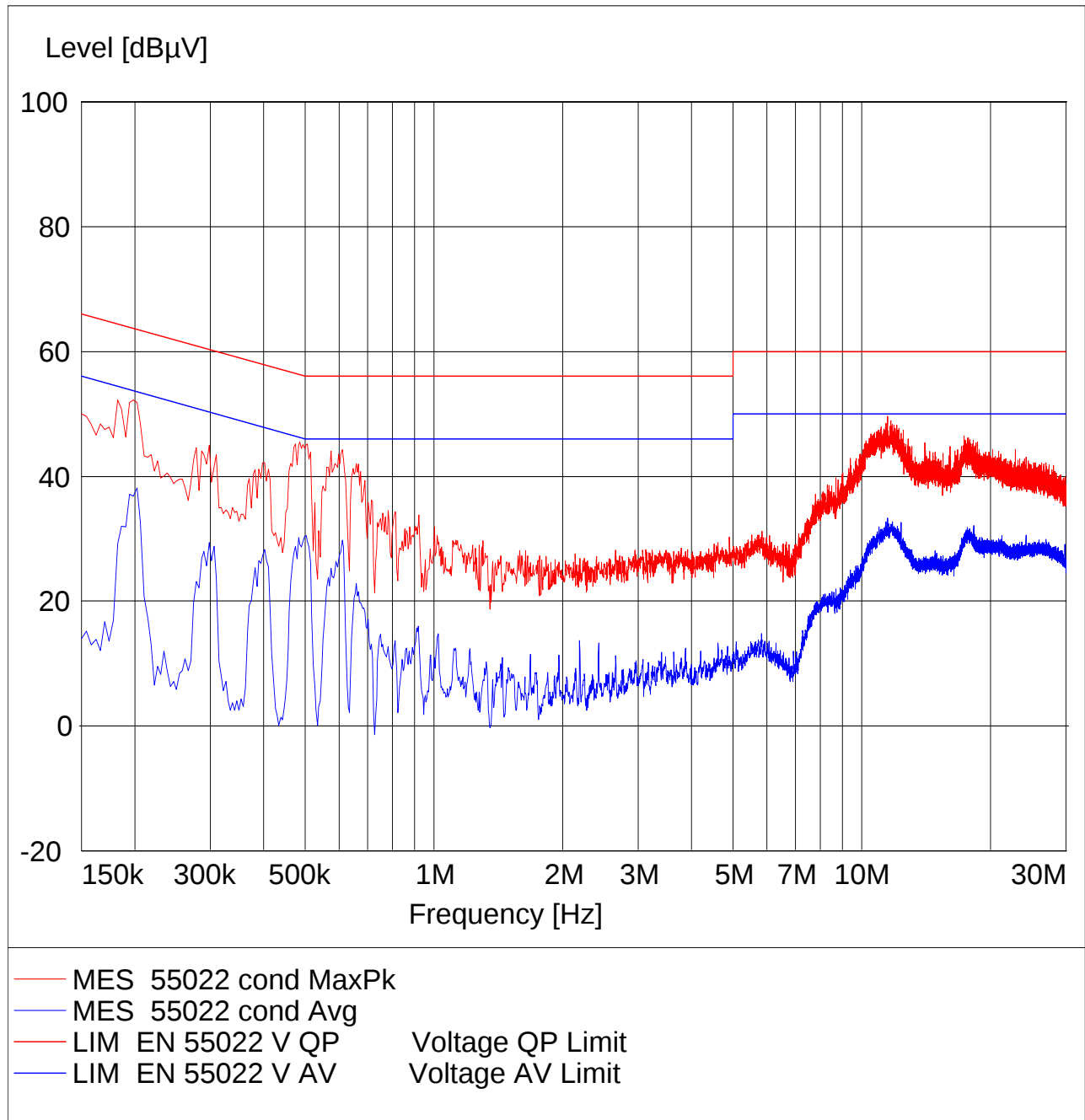
LIMIT LINE: "EN 55022 V QP"

Short Description: Voltage QP Limit
4/27/1998 2:24PM

Frequency	Level
MHz	dBμV
0.150000	66.00
0.500000	56.00
5.000000	56.00
5.000000	60.00
30.000000	60.00

6.5.11 RESULTS Receiver mode Neutral:

EUT: Laptop
Manufacturer: Sony
Test Mode: Rx
ANT Orientation:: LISN
EUT Orientation:: H
Test Engineer:: Chris
Power Supply: : AC Adapter
Comments: : Neutral



LIMIT LINE: "EN 55022 V AV"

Short Description:		Voltage AV Limit
4/27/1998 2:24PM		
Frequency	Level	
MHz	dBµV	
0.150000	56.00	
0.500000	46.00	
5.000000	46.00	
5.000000	50.00	
30.000000	50.00	

LIMIT LINE: "EN 55022 V QP"

Short Description:		Voltage QP Limit
4/27/1998 2:24PM		
Frequency	Level	
MHz	dBµV	
0.150000	66.00	
0.500000	56.00	
5.000000	56.00	
5.000000	60.00	
30.000000	60.00	

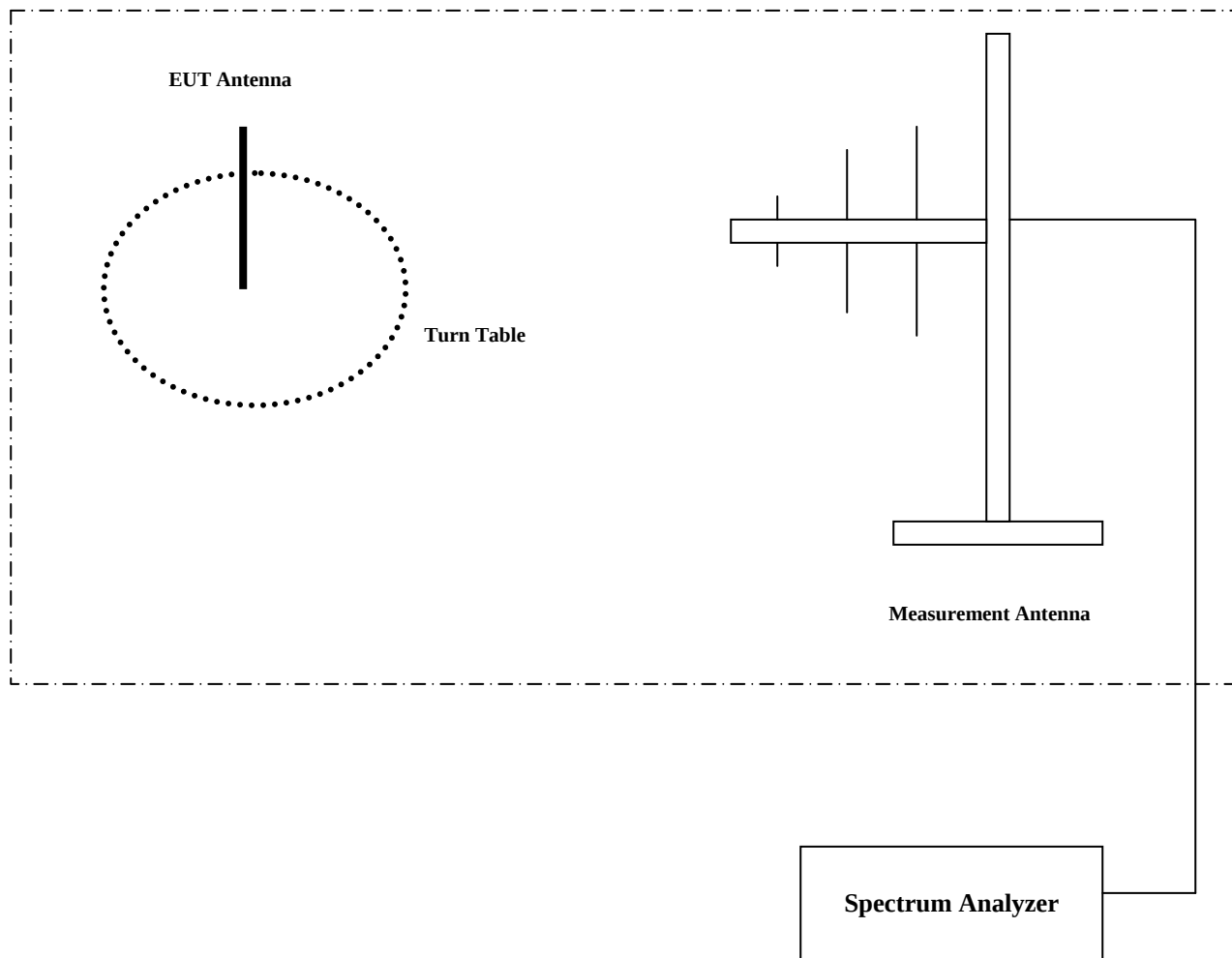
7 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2009	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	August 2009	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2009	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2009	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2009	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2009	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2009	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2009	1 year
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
12	Pre-Amplifier	JS4-00102600	Miteq	00616	May 2009	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2009	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2009	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2009	1 year
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2009	1 year
17	Loop Antenna	6512	EMCO	00049838	July 2009	2 years

8 BLOCK DIAGRAMS

Radiated Testing

ANECHOIC CHAMBER



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9 Revision History

2008-7-30: First Issue